

The genus *Diostracus* from Nepal (Diptera, Dolichopodidae)*

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ABSTRACT Thirty-three new species of the genus *Diostracus* are described from eastern Nepal based on the collections brought by the Kyushu University Scientific Expedition to the Nepal Himalaya in 1972 and by Mr. J. EMOTO in 1981. Three described species included in the collections are also noted. A key to all the named Nepalese species (37 species) is given.

Introduction

The genus *Diostracus* Loew, 1861 had been known as a minor Nearctic Hydrophorine group consisting of only three species until TAKAGI (1968) described 13 new species from Japan and Taiwan. He (1972) also newly described four named and one unnamed species from mountain region of Nepal. Thus the genus is at present considered to be one of the typical Asio-Nearctic groups, and comprises 21 species. It is best represented in Japan (10 species), and also occurs in North America (3 species), Taiwan (3), and Nepal (5).

The present work is a taxonomic study of the genus based on some 870 specimens collected in eastern Nepal by the members of the Kyushu University Scientific Expedition to the Nepal Himalaya in 1972 and by Mr. J. EMOTO of Nanzan University in 1981. The specimens are classified into 36 species, of which 33 are new to science and 3 are known species described by TAKAGI (1972) from Nepal. The total number of the included species of the genus now increases to 54, two and a half times of the hitherto known species. Thus it becomes clear that the genus most flourishes in the Himalayan region, since the Japanese fauna of the genus has been already extensively surveyed and only a few new species are expected there. Judging from the number of species of Nepalese *Diostracus* and their diversification and geographical differentiations, it is also assumed that the genus is represented by vast number of species in the mountain area from Nepal to western China through Bhutan, Assam and northern Burma.

In the morphological respect, this genus is extremely diversified especially in the thoracic chaetotaxy, an important generic character in Dolichopodidae, in

* Result of the Kyushu University Scientific Expedition to the Nepal Himalaya, Diptera 4.

comparison with the related genera (TAKAGI, 1972). The present material shows more extensive range of diversification in the chaetotaxy than that suggested by TAKAGI. For instance, the *unisetosus*-group lacks the anterior notopleural bristles, and one species of the *unipunctatus*-group is wanting in the scutellar bristles. The absence of the scutellars is quite exceptional in the Dolichopodidae. Moreover, the empodia and pulvilli of legs are occasionally much reduced to minute tubercles or obliterated.

Although the genus *Diostracus* as a single genus shows extreme variety, our knowledge on its diversification is considered to be too insufficient to split it into several genera. The phylogenetic consideration based on the comparative morphology is not included in the present work, and the purpose of the paper is confined to name the undescribed species. But, at least, most of the species groups proposed in this paper will be raised to the subgeneric rank, when the phylogenetic analysis based on all the known species will be carried out.

The holotypes and paratypes of the new species are preserved in the collection of Nepalese insects in the Biological Laboratory, College of General Education, Kyushu University, Fukuoka. Many paratypes of almost all the species are also preserved in the collection of the Kitakyushu Museum of Natural History, Kitakyushu.

The latitudes, longitudes and altitudes of localities are listed before reference.

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Key to the Nepalese species of the genus *Diostracus*^{1), 2)}

- | | |
|--|---|
| 1. Two, anterior and posterior, notopleural bristles present | 3 |
| Only posterior notopleural bristle present, anterior notopleural bristle absent. (<i>unisetosus</i> -group) | 2 |

1) The unnamed species of TAKAGI (1972) is excluded.

2) *D. ramulosus* Takagi having the posteriorly dislocated posthumeral is tentatively included in the *flexus*-group, though its pretarsal structure, tarsal vestiture, and vertical bristles are not examined.

2. In males: No accessory cellulae formed at anteroproximal portion of cell M_3 ; f_2 posteroventrally clothed with fine longish yellow hairs towards base. Upper portion of propisternum clothed with 3–4 fine yellow hairs
.....*D. unisetosus* sp. nov., ♂ (p. 14)
- In males: One to 2 accessory cellulae formed at anteroproximal portion of cell M_3 ; f_2 posteroventrally almost bare. Upper portion of propisternum without fine yellow hairs
.....*D. nigrilineatus* sp. nov. (p. 16)
3. At least empodium of ordinary form, well developed, hair-like and ventrally ciliated; distal tarsomeres covered with pollen in various density, and bearing subdecumbent setulae.....12
Both empodium and pulvilli almost atrophied into minute protuberance, and seemingly obliterated in all legs; distal tarsomeres free from pollen, and bearing appressed setulae. (*fenestratus*-group) 4
4. Posthumeral bristle nearer to humeral bristle than to transverse suture; vertical bristles present. In males: No or 1 accessory cellula formed at anterodistal portion of discal cell; palpus enlarged, extending anteriorly beyond rostrum 7
Posthumeral bristle nearer to transverse suture than to humeral bristle; vertical bristles absent. In males: Three or more accessory cellulae formed at anterodistal portion of discal cell; palpus small, not extending anteriorly beyond rostrum. Only ♂ known. (*fenestratus*-subgroup) 5
5. F_2 and f_3 beneath without long hairs or bristles; t_2 long ciliated 6
 F_2 posteroventrally with a thick clump of erect golden yellow hairs between basal $1/3$ and $1/2$; f_3 with an anteroventral row of erect bristles except on basal and apical $1/4$; t_2 simple. Three accessory cellulae present; wing strongly emarginate around tip of M_3 *D. ramulosus* TAKAGI, ♂
6. Jet-black nodule along discal crossvein ca. $5\times$ as long as wide; 5 accessory cellulae formed at anterodistal corner of discal cell; t_2 simple, without long curled setae posteriorly; cercus uniformly short yellow-haired ...*D. reticulatus* sp. nov., ♂ (p. 20)
Jet-black nodule along discal crossvein ca. $2.6\times$ as long as wide; 3 accessory cellulae at anterodistal corner of discal cell; t_2 with posterior ciliation of short, erect, apically curled, black setae; cercus clothed with long golden hairs apically*D. fenestratus* sp. nov., ♂ (p. 19)

7. In males: Wing decorated with brown and semiopaque yellow markings; discal crossvein strongly sinuate in S-shape; anterodistal corner of discal cell with an accessory cellula which emits a short veinlet to cell M_1 . In females: Proepisternum with 1-3 fine yellow hairs on each upper and lower portions, anterodistal margin of cx_1 clothed with fine yellow ciliation occasionally mixed with a stiff yellow seta near outer distal margin, and discal cell produced posterodistally. Only males are classified into species. (*pulchripennis*-subgroup) 8
- In males: Wing with more or less distinct white areas around discal cell and apex of cell M_1 , no semiopaque yellow markings on wing; discal crossvein not reccurent proximally, but running much obliquely or almost longitudinally towards posterodistal corner of discal cell, which has no accessory cellula at anterodistal portion. In females: Either proepisternum with several (more than 3) long fine yellow hairs in a cluster on each upper and lower portions and anterodistal margin of cx_1 ciliated with stiff pale setae, or discal cell obtuse at posterodistal corner and no ciliation along anterodistal margin of cx_1 (but densely clothed subapically on its anterior surface). (*flexus*-subgroup) 10
8. In males: Each lateral portion of 5th abdominal tergum projected into an elongate process; t_2 without a posterior row of erect fine black setae 9
- In male: Each lateral portion of 5th abdominal tergum expanded into a broad triangular lobe; t_2 with a posterior row of erect fine black setae ($1.5-2 \times$ as long as t_2 width) on basal $1/2$. Hind femur with a posteroventral row of densely set suberect black setae *D. pretiosus* sp. nov., ♂ (p. 30)
9. In males: F_2 beneath, weakly raised subbasally and ornamented with a group of short, stiff, posteroventral spines, and 1-3 longish tawny erect ventral spines on basal $1/5$, which are alternated by a posterior row of long (more than f_2 thickness), curled, golden yellow hairs shorter distally and disappearing subapically *D. emotoi* sp. nov., ♂ (p. 31)
- In males: F_2 evenly flattened ventrally throughout, and almost bare beneath except a short row of short (less than $1/2$ of f_2 thickness) yellow posterior hairs at subbasal portion *D. pulchripennis* sp. nov., ♂ (p. 29)

10. Cx_1 with an anterodistal ciliation of stiff pale setae; proepisternum with a cluster of several fine hairs on each upper and lower portions. In males: Wing shape normal, discal crossvein running first posteriorly or posteroproximally for a short distance, then acutely bent outwards and running subparallel to M_1 until black-maculated, evenly and gently curved, posterodistal portion; 1st basal cell distinctly longer than anal cell; t_2 only with several longish setae posteriorly towards tip. In females: Posterodistal angle of discal cell acute to 90° ; 1st basal cell distinctly longer than anal cell. Only males are classified into species11
- Cx_1 without an anterodistal ciliation of setae, but clothed subapically with dense, erect to suberect, fine, yellow hairs; proepisternum with 0–3 fine pale hairs on upper portion, 2–3 similar but ventrally decumbent hairs almost arranged in a vertical row on lower portion. In males: Wing shape anomalous, a short, proximally curved, narrow lobe projecting at and including apical portion of M_3 ; discal crossvein running posteriorly close to M_1 on basal $1/2$, then gently diverging from it and entered into the lobe on posterior margin; 1st basal cell distinctly shorter than anal cell; apical portion of t_2 much ornamented with posterodorsal ciliation of long and erect setae, dense ciliation of anterior hairs, and apical brush of long posteroventral hairs. In females: Posterodistal corner of discal cell obtuse, discal crossvein outcurved; 1st basal cell almost as long as anal cell*D. pennilobatus* sp. nov. (p. 24)
11. In males: Ventrodistal portion of front basitarsus with a short rounded lobe; t_2 evenly slender on subbasal portion; main lobe of surstylus of genitalia broad, not tapering apically but broadly rounded*D. flexus* TAKAGI, ♂ (p. 22)
- In males: Ventrodistal portion of front basitarsus angulated; t_2 with a weak posteroventral swelling subbasally; main lobe of surstylus of genitalia slender, tapering to incurved, pointed tip*D. nishidai* sp. nov., ♂ (p. 23)
12. Pulvilli well developed, pad-like and pilose17
- Pulvilli of all legs each atrophied into a minute spot without pile. Dorsocentrals 4 in number; male palpus shining silvery. (*impulvillatus*-group)13
13. Mesonotum without a pair of whitish pollinose spots between the anteriormost dorsocentrals and humeral calli. In

- males: Front metatarsus not bifurcate, at most much dilated apically14
- Mesonotum with a pair of whitish pollinose spots between anteriormost dorsocentrals and humeral calli. In males: Front basitarsus bifurcate apically, i.e. a ventral lobe projecting from subapical portion*D. angustipalpis* sp. nov. (p. 38)
14. Discal crossvein at most broadly and evenly dark-bordered. In males: Front basitarsus either strongly dilated with ventral hairs, or slightly dilated with ventral bristles; cx_1 in frontal view with almost straight inner outline15
- Discal crossvein with an obscurely margined, circular, dark grey spot occupying on its anterior 2/3. In males: Front basitarsus evenly slender throughout, beneath with many hair-like setae on basal 2/3; cx_1 strongly emarginate on inner surface. Claws much elongate, in front leg 3/4 (in male) or 2/3 (in female) as long as 5th tarsomere*D. longiunguis* sp. nov. (p. 36)
15. Claws short, in front leg not more than 1/2 length of 5th tarsomere, almost as long as empodium; head and mesonotum subshining, with greenish, bronze or cupreous reflections; palpus broader, nearly 2 (in male) or 1.3 (in female) \times as long as thickness of 3rd antennal segment. In males: Front basitarsus slender, only slightly dilated apically, its subapical portion 2 \times as thick as subbasal portion; basitarsus bearing beneath stiff bristles; front 5th tarsomere without a dense anterodorsal ciliation of long curved hairs16
- Claws much elongate, in front leg 3/4 (in male) or 2/3 (in female) as long as 5th tarsomere; head and mesonotum sombre in colour, without green, bronze or cupreous reflections; palpus narrower, 1.3 (in male) or 1 (in female) \times as long as thickness of 3rd antennal segment. In males: Front basitarsus strongly dilated apically, its thickest part 3 \times as thick as subbasal portion; the basitarsus bearing beneath long hair-like setae; front 5th tarsomere with a dense anterodorsal ciliation of long curved hairs*D. chaetodactylus* sp. nov. (p. 37)
16. Humeral callus without short, fine, yellow setae in addition to humeral bristle. In males: Anteroventral bristles of f_3 dark brown to black; cercus of genitalia longer, 3 \times as long as wide, parallel-sided, with rather truncated apical

- margin. In females: Anteroventral bristles of f_3 fine and shorter than f_3 thickness*D. impulsillatus* sp. nov. (p. 33)
- Humeral callus with 1–2 short, fine, yellow setae in front of humeral bristle. In males: Anteroventral bristles of f_3 tawny to yellow; cercus of genitalia shorter, a little longer than $1.5 \times$ width, with rather rounded apical margin. In females: Anteroventral bristles of f_3 much stronger, as long as or longer than f_3 thickness*D. fulvispinatus* sp. nov. (p. 34)
17. Five or 6 dorsocentral bristles25
Only 4 dorsocentral bristles. (*quadrisetosus*-group)18
18. Legs extensively yellowish, at least femora almost entirely yellowish to yellowish brown19
Legs extensively darkened, at most yellowed around trochanters and knee joints20
19. Vertical bristles absent. In males: Cx_1 clothed with long, yellow hairs almost as long as Cx_1 width, its anterodistal ciliation fine and yellowish; f_1 without a distinct posteroproximal bristle; front basitarsus anteroventrally with a row of setulae not much differentiated from those on other surfaces*D. simplicipes* sp. nov. (p. 43)
Vertical bristles present. In males: Cx_1 clothed with short yellow hairs much shorter than Cx_1 width, its anterodistal ciliation including 3 innermost blackish setae; f_1 with a strong posteroproximal bristle; front basitarsus with an anteroventral row of stiff short spinules distinctly differentiated from other setulae*D. parvus* sp. nov., ♂ (p. 44)
20. Cx_2 rather densely clothed anteriorly with long, curved, suberect, golden yellow setae on distal $1/2$. In males: Cx_1 with inner margin emarginate, and anterior surface more or less raised at subapical portion and there bearing a clump of black spines or spinules21
 Cx_2 clothed with a few decumbent, yellow setae anterodistally. In males: Cx_1 with inner margin straight in frontal view, and anterior surface without a clump of black spines or spinules on subapical portion which is not raised22
21. Posterior vein of discal cell straight, so that the cell evenly widening towards discal crossvein; f_1 thickest at basal $1/3$, then gradually and evenly tapering to tip. In males: F_1 not strongly swollen basally, and with a ventral row of ca. 7 long yellow setae (the longest as long as f_1 thickness);

- front basitarsus almost straight; middle tarsus simple
*D. auripalpis* sp. nov. (p. 41)
- Posterior vein of discal cell gently sinuate anteriorly near posterodistal corner of the cell, so that the cell keeping almost the same width or slightly narrowing on apical portion; f_1 thickest at basal $1/3$, then strongly tapered to basal $3/5$, and keeping the same thickness for apical $2/5$. In males: F_1 strongly swollen on basal $1/2$, strongly constricted ventrally at the middle, bearing a short anteroventral row of stiff yellow bristles and scattering brown to black setae posteroventrally; front basitarsus distinctly sinuate; middle basitarsus bearing a posterior ciliation of longish bristles, 2nd and 3rd tarsomeres with an anteroventral and a posteroventral rows of subpennate setae
*D. femoratus* sp. nov. (p. 42)
22. Face without a greyish vertical median stripe. In males: Palpus either much enlarged and yellowish white with silky lustre or small and yellow23
- Face with a narrow greyish vertical median stripe on dull blackish ground when viewed anterodorsally. In males: Palpus enlarged ($0.56 \times$ as long as eye height) and yellow (not yellowish white) with slight bluish silvery reflections
*D. makiharai* sp. nov. (p. 49)
23. In males: R_{4+5} distinctly thicker than R_{2+3} ; palpus at most $0.9 \times$ as long as eye height. In females: A ratio of the narrowest width of face to eye height $0.29-0.35$; total number of blackish postocular bristles on both sides (excluding a pair of postverticals) 7-14. Only males are classified into species24
- In males: R_{4+5} thinner than R_{2+3} at least at the level of middle of free section of M_1 ; palpus $1.1-1.2 \times$ as long as eye height. In females: A ratio of the narrowest width of face to eye height $0.36-0.42$; total number of blackish postocular bristles on both sides (excluding a pair of postverticals) 3-7*D. magnipalpis* sp. nov. (p. 45)
24. In males: Palpus enlarged, $0.77-0.89 \times$ as long as eye height, yellowish white, with silky lustre. Known distribution: More western to Thudam area ...*D. aurifer* TAKAGI (p. 47)
- In males: Palpus small, $0.36-0.42 \times$ as long as eye height, orange-yellow with silvery lustre. Known distribution: Thudam area*D. quadrisetosus* sp. nov. (p. 50)

25. At least, lower postocular bristles, lower occipital, proepisternal and front coxal setae mostly golden yellow to yellowish white26
- Head, proepisternum and Cx_1 black-haired and bristled, without any yellowish vestiture. Small blackish species with simple legs and wings*D. nigripilosus* sp. nov. (p. 51)
26. Arista subbasal, arising from basal 1/2 of oblique dorsal margin of triangular 3rd antennal segment27
- Arista apical, subapical or dorsal, arising from distal 1/2 of 3rd antennal segment, which is not triangular in lateral aspect28
27. Vertical bristle much shorter and thinner than postvertical bristle; basal segment of arista as thick as apical segment, so that the joint between them inconspicuous; 5 dorsocentrals, no sutural bristle; wing distinctly and broadly darkened along veins; Cx_1 densely clothed with long golden yellow to yellow hairs or setae. In males: Palpus elongate, glittering golden with greenish reflections; front basitarsus slender throughout, and with a row of long posteroventral bristles and irregularly biserial short anteroventral spinules*D. umbrinervis* sp. nov. (p. 52)
- Vertical bristle almost as strong as postvertical bristle; basal segment of arista distinctly thicker than apical segment, the joint between them distinct; 6 (occasionally 5) dorsocentrals; sutural bristle present (occasionally absent); wing not distinctly and broadly darkened along veins; Cx_1 sparsely clothed with short pae hairs. In males: Palpus oval, bluish silvery to silvery; front basitarsus distinctly dilated ventrally towards tip, without strong bristles*D. tangalensis* sp. nov. (p. 54)
28. Wing without an obscure large dark cloud around antero-distal portion of discal cell. In males: Cx_1 without a weak subapical tubercle bearing closely set, curved, black spines, but clothed with longish to long yellow hairs especially towards base, and very often with a clump of strong, short, erect, black setae subapically; wing with a jet-black nodule or stripe in cell M_3 close to discal crossvein29
- Wing with an obscure large dark cloud around antero-distal portion of discal cell, the cloud continuing to dark bordering of discal crossvein. In males: Cx_1 almost practically bare on more or less emarginate anterior surface, and bearing 1-3 closely set, curved, black spines on

- weak subapical tubercle; wing without a jet-black nodule
or a stripe close to discal crossvein*D. nebulosus* TAKAGI (p. 55)
29. Five dorsocentrals30
Six (rarely 7 or more in abnormal specimens) dorsocentrals
(*unipunctatus*-group)31
30. No dark cloud before the middle of free section of M_1 ; Cx_3
with densely set straight black setae at tip; small, sombre-
coloured species having infuscate wings with dark bordered
strong veins. In males: Cx_1 densely clothed with stiff
yellow setae on basal 1/2; front basitarsus not dilated api-
cally; f_3 almost bare beneath; discal crossvein forming a
deep hairpin curve embracing an elongate jet-black linear
brand. In female: Discal crossvein angulate inwards;
terminalia with a pair of prominent cerci projecting pos-
teriorly from its tip*D. alticola* sp. nov. (p. 58)
- A more or less obscure dark cloud before the middle of
free section of M_1 ; Cx_3 with sparse, short, yellow hairs at
tip; larger-sized species having wings with normally thin
veins. In males: Cx_3 rather sparsely clothed with short
fine yellow hairs on basal 1/2; front basitarsus distinctly
dilating apically; f_3 bearing ventral ciliation of long golden
yellow bristles or setae for middle 1/2; discal crossvein
forming a semiloop embracing a rounded, jet-black nodule.
In female: Discal crossvein slightly sinuate; cerci not
prominent externally*D. shimai* sp. nov. (p. 56)
31. Scutellum with a pair of strong marginal bristles and
rarely with 1-2 outer minute setulae (rarely abnormal
specimens lack one of the strong marginal bristles or both
much reduced in size, in this case males have either the
anteromedially bristled hind femora or the wings shorter
than 7.2 mm, females have wings shorter than 8 mm or
2nd abdominal tergum with a narrow brownish pollinose
posterior band which at most expands to anterior 1/3 at
dorsal portion)32
- Scutellum without a pair of strong marginal bristles, but
occasionally with 1-2 minute setulae homologous with the
pair of setulae lateral to scutellar bristles in related species.
In males: Wing 7.3-8.3 mm long, face purplish blue; f_3
without bristles on anterior or anteroventral surface near
middle. In females: Wing 8.0-8.7 mm long, almost
uniformly infuscated greyish brown; brownish pollinose

- posterior bands of abdominal terga broad, in 2nd tergum the band expanding to or close to anterior margin of the tergum on subdorsal to dorsal portions
*D. gymnoscutellatus* sp. nov. (p. 64)
32. Large-sized species; length of wing more than 8.5 mm33
 Small-sized species; length of wing less than 7.8 mm34
33. Viewed anteriorly, frons with a vertically long light grey pollinose median marking which is nearly as broad as anterior ocellus and occasionally very narrowly extended to eye-margin along border between vertex and frons, but the extended portion never broadly dilated downwards along eye-margin, sides of antennal sockets never broadly greyish; vertical bristles weak, at most $\frac{2}{3}$ as long as postverticals, or $\frac{1}{2}$ as long as ocellar bristles; head large, the largest distance between upper extremity (usually ocellar tubercle) to distal margin of labella more than 1.7 mm. In males: Third antennal segment short, $1.1-1.4\times$ as long as thick; f_1 with 1-3 (mostly 2) short posteroproximal bristles arranged longitudinally; jet-black nodule at discal crossvein more circular, occupying posterior portion of the crossvein, so that posterior straight section of crossvein $\frac{1}{4}-\frac{1}{3}$ of anterior straight section; lateral portions of 4th abdominal tergum only slightly expanded, with straight lateral margins, and clothed with golden hairs much weaker (in length and thickness) than those on lower occiput. In females: Golden yellow hairs shorter, those on 4th and 5th abdominal terga much shorter than f_3 thickness*D. nepalensis* sp. nov. (p. 62)
- Viewed anteriorly, upper $\frac{1}{2}$ of frons almost entirely greyish pollinose, thus the sides of frons along eye-margins broadly greyish pollinose downwards beyond the middle; sides of antennal sockets also broadly light grey pollinose; vertical bristles strong, usually as strong as postverticals or stronger, longer than $\frac{2}{3}$ length of ocellar bristles; head smaller, the largest distance between ocellar tubercle to distal margin of labella at most 1.6 mm. In males: Third antennal segment $1.5-1.9$ (mostly 1.7) \times as long as thick; f_1 with 4-6 short posteroproximal bristles in a mass, not in a longitudinal row; black nodule at discal crossvein elongate, occupying near middle of the crossvein, thus the posterior straight section of the crossvein $0.8-1.1$ of the anterior straight section; lateral portions of 4th abdominal

tergum strongly expanded, with rounded lateral margins, and clothed with golden hairs as strong as those on lower occiput. In females: Golden hairs longer, some of those on 4th and 5th abdominal terga longer than f_3 thickness

.....*D. auripilosus* sp. nov. (p. 65)

34. Second to 5th dorsocentrals long, 2nd and 3rd usually longer than $250\ \mu$, almost $2\times$ as long as vertical length of prothoracic spiracle; 3rd antennal segment usually longer than $1.2\times$ thickness, if $1.1-1.2\times$ as long as thick, then the segment not circular in lateral aspect, with its ventral margin parallel to long axis of antenna for basal $1/2$, bent near middle, then almost straight and obliquely extending to the angulated apex for apical $1/2$. In males: Third abdominal sternum densely clothed with apically curled long golden yellow hairs, of which the longest are more than length of 3rd tergum35

Second to 5th dorsocentrals short, 2nd and 3rd usually ca. $175\ \mu$ or shorter, only a little longer than vertical length of prothoracic spiracle; 3rd antennal segment $0.8-1.0$ (rarely $1.1\times$) as long as thick, circular in lateral aspect, with its ventral to distal margin evenly rounded, thence without angulate apex. In males: Third abdominal sternum sparsely clothed with short yellow hairs, of which the longest are shorter than $1/2$ length of 3rd tergum36

35. Vertical bristles as strong (in length and thickness) as postverticals or stronger; f_2 and f_3 beneath with several long golden yellow hairs, the longest of which are ca. $2.0-2.5\times$ as long as f thicknesses in male, as long as thicknesses in female. In males: Third antennal segment weakly elongate, $1.5\times$ as long as thick, with rather subapical arista; 4th and 5th abdominal terga clothed laterally with long golden hairs, those of 4th tergum as strong as those on 3rd sternum*D. parvipunctatus* sp. nov. (p. 68)

Vertical bristles distinctly weaker (in length and thickness) than postverticals; f_2 and f_3 beneath at most with sparse fine short yellow hairs, the longest of which are ca. $1/2$ as long as f thicknesses, but males often with 2-3 longer setae beneath towards base on f_2 . In males: Third antennal segment much elongate, $1.7-2.0\times$ as long as thick, with dorsal arista; 4th abdominal tergum clothed laterally with golden hairs which are distinctly weaker than those on 3rd

sternum; 5th tergum laterally almost bare, without any long golden hairs below submarginal black spots

.....*D. longicornis* sp. nov. (p. 67)

36. In males: F_2 beneath without several very long yellow bristles towards base, but with scattered very fine short pale hairs much shorter than f_2 thickness; subapical clump of black setae on cx_1 located rather proximally, so that proximal border of the clump at the middle level of inner margin of cx_1 in frontal aspect. In females: Area of cx_1 homologous with the clump-bearing portion in male densely clothed only with yellow setae, no black setae on cx_1 ; discal portion of mesonotum usually subshining green, occasionally subshining dark green with a cupreous reflections*D. unipunctatus* sp. nov. (p. 71)

In males: F_2 with several very long yellow setae (the longest as long as $2 \times f_2$ thickness, or longer) around a long black bristle at basal $1/3$; subapical clump of black setae on cx_1 located distally, so that proximal border of the clump much distad to the middle level of inner margin of cx_1 in frontal aspect. In females: Area of cx_1 homologous with the clump-bearing portion in male clothed with black setae including some yellow ones; discal portion of mesonotum usually dull brownish green, occasionally dull green*D. rotundicornis* sp. nov. (p. 70)

The *unisetosus*-group

♂. Antenna with 1st segment rather short, bare, 3rd segment ca. $0.8 \times$ as long as thick, semicircular, with subapical arista; vertical bristles weak; palpus moderately broad, $2 \times$ as long as wide, glittering bluish; postocular ciliation black down to the middle level of eye; golden yellow lower occipital hairs fairly dense and long.

Thorax with mesonotum shining green, subdorsal stripes and sublateral part of mesoscutum bronze, humeral callus and notopleural depression grey; pleura greyish pollinose. Chaetotaxy: Six fairly long dorsocentrals, each one humeral, posthumeral, posterior notopleural, supra-alar, postalar strong, humeral callus with 1-2 minute hairs in front of humeral, no anterior notopleural; scutellum with a pair of strong bristles and proepisternum with 1-2 strong yellow setae and 0-2 fine setulae on lower portion, and with or without several fine yellow setae on upper portion.

Legs dull bluish green, tibiae and tarsi blackened, front trochanter yellowish,

tip of femora paled. Legs moderately long and simple. Cx_1 clothed with fine yellow hairs longer towards base, and bearing black anterodistal bristles. Femora short-setose and with anterior preapical bristles on f_2 and f_3 ; f_2 may bear long yellow hairs towards base. T_2 cylindrical, short-setose beneath. Front basitarsus slightly dilating beneath towards subapical portion, only short-setose except several apical setae; 2nd tarsomere a little constricted beneath subbasally, and bearing a minute ventroproximal triangular denticle. Claws, empodium and pulvilli moderately large.

Wing with discal crossvein sinuate as in *D. flexus* or *D. fenestratus*, most part of the vein running longitudinally parallel to posterior margin of discal cell, a long, linear black band running close to and just in front of the longitudinal portion of discal crossvein.

Abdomen subshining green, moderately robust, terga short black-setose, 1st tergum with long black marginal bristles; 4th sternum projecting posteroventrally into a pair of blunt processes; genitalia moderately large, epandrium a little projecting above beyond dorsal margin of abdomen; cercus narrow, tapering apically, clothed with long yellow setae marginally, those on apical part and inner proximal portion very long.

♀. Terminalia not compressed laterally; discal crossvein much oblique, posterodistal corner of discal cell strongly produced.

The *unisetosus*-group is best characterized by the absence of the anterior notopleural bristle, a character unique to this group in the genus *Diostracus*. In addition, the strong lower proepisternal setae, the extremely short 3rd antennal segment, rather simple short-setose front basitarsus and the much elongate longitudinal discal crossvein are important diagnostic characters of the group.

The *unisetosus*-group is represented by the following two sympatric species from lower altitudes (2,000–2,400 m) which are considerably differentiated from each other. It is highly expected that the group is distributed widely in the lower altitudes in the Himalaya, and consists of many species.

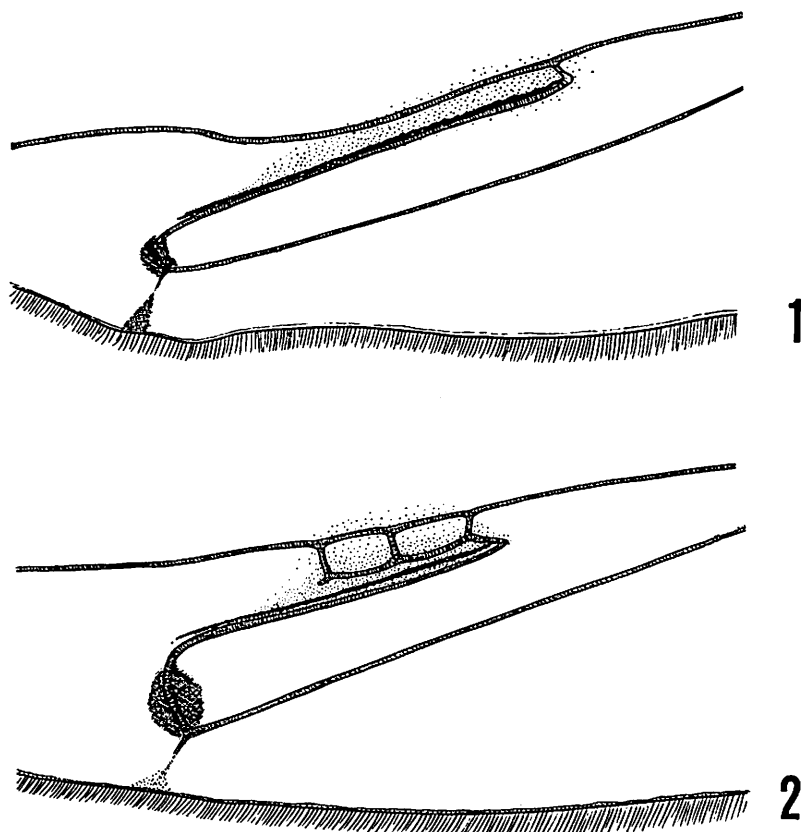
***Diostracus unisetosus* sp. nov.**

♂. Third antennal segment $0.75 \times$ as long as thick, most produced ventrodistally. Palpus a little longer than $2 \times$ width, widest at apical $1/3$, tapered to roundly produced ventrodistal corner. Proepisternum with 3–4 hairs on upper portion, 1–2 strong setae and 1 shorter hair on lower portion.

Front leg: Anterior surface of Cx_1 with ca. 15 long yellow hairs on subbasal portion, and much shorter, fine hairs sparsely on other portion; f_1 sparsely with fine short yellow hairs beneath; 5 posteroventral bristles on t_1 , $1.5 \times$ as long as t_1 thickness; basitarsus $0.38 \times$ as long as t_1 , a little compressed, slightly dilated apically, densely clothed with minute setulae beneath, with its dorsal margin

weakly curved dorsally beyond the middle, with its subapical portion $1.7\times$ as thick as subbasal portion; 2nd tarsomere $0.74\times$ as long as basitarsus, with a prominent ventroproximal denticle. F_2 clothed beneath with a double row of short, fine, yellow hairs, the posteroventral row mixed with 3-4 long yellow setae on basal $1/4$; f_3 short-setose above and beneath.

Wing (Fig. 1) tinged with grey; cell M_1 much widened beyond the middle, then gently tapering apically; discal crossvein arising from basal $3/7$ of M_1 (r-m crossvein to M_1 tip), directing posteroproximally for a short distance, then acutely bent distally, longitudinally running parallel with M_1 for a long distance, extending near the tip of discal cell, and abruptly roundly recurrent to M_3 ; M_1 almost parallel to basal $1/2$ of the longitudinal portion of discal crossvein, then gently diverging; a long, narrow, longitudinal black brand close to discal crossvein from the basal bend to near darkened posterodistal corner of the discal cell; the darkened area extending along weak M_3 to the wing margin, where the posterior



Figs. 1-2. Male left wings, posteromedian portion.

1. *Diostracus unisetosus* sp. nov., 2. *Diostracus nigrilineatus* sp. nov.

margin of the wing weakly expanded. Genitalia with cerci each forming a small inner proximal lobe which is densely clothed with longish yellow hairs.

Length: Body 4.5 mm (from anterior margin of clypeus to tip of epandrium); wing 5.5 mm.

Holotype ♂, Sukhe Kohla (2,050 m), 27°31'N, 87°16'E, E. Nepal, 23. vi. 1981 (J. EMOTO).

Remarks: *D. unisetosus* is readily distinguished from all the known species of *Diostracus* except the next one by the unisetose notopleural depression.

***Diostracus nigrilineatus* sp. nov.**

♂. Resembling *D. unisetosus*, but differing as follows: Third antennal segment longer, $0.85 \times$ as long as thick; proepisternum with no hairs on upper portion, 1 strong black seta and 1–2 short hairs on lower portion; front basitarsus shorter, $0.28 \times$ as long as t_1 , more strongly dilated subapically, subapical portion $1.9 \times$ as thick as subbasal portion; 2nd tarsomere $1.1 \times$ as long as basitarsus; t_1 posteroventrally with 3 strong bristles on apical 2/3 and an equally strong pre-apical; f_2 almost bare beneath, with 2 short but strong black anteroventral setae at basal 1/3.

Wing (Fig. 2): Discal cell shorter, consequently longitudinal portion of discal crossvein shorter; a secondary vein arising from the anteriormost portion of discal crossvein, running parallel to it, and ending at its middle level by connecting with M_1 (in right wing, the tip is free), a short crossvein connecting M_1 and the middle of the secondary vein; hind margin of wing not expanded around tip of M_3 . Cercus without a distinct inner proximal lobe.

Length: Body 5.2 mm; wing 5.7 mm.

♀. Resembling the male; palpus shorter and greyish brown, each of two females having 5 and 6 dorsocentrals; anterior yellow hairs of cx_1 shorter; f_2 with strong anteroventral setae; wing evenly brownish grey, venation normal, except discal crossvein is much oblique and gently bisinuate, so that posterodistal corner of discal cell acutely produced; M_3 $0.78 \times$ as long as distance between tips of discal crossvein.

Length: 4.7–5.4 mm; wing 5.7–6.1 mm.

Holotype ♂, Sukhe Khola (2,050 m), 27°31'N, 87°16'E, E. Nepal, 23. vi. 1981 (J. EMOTO).

Paratypes: 2♀♀, Navagaon (2,100 m) – Moyam (1,900 m), 30. vi. 1981 (J. EMOTO) (KMNHIR100024).

Remarks: *D. nigrilineatus* is, in the male, easily distinguished from *D. unisetosus* by the peculiar secondary venation around the anterior portion of discal crossvein. The two female paratypes here associated with the male holotype were not collected at the type-locality, but they almost certainly belong to

nigrilineatus judging from the bare upper portion of the proepisternum.

The *fenestratus*-group

♂. Third antennal segment oval with subapical arista or moderately elongate and tapered to pointed apex, with apical arista. Vertical bristles present or absent. Palpus small and rather tightly applied on rostrum or enlarged and loosely applied.

Thoracic chaetotaxy: Each 1 humeral, posthumeral, supra-alar and postalar, 2 notopleurals, 6 dorsocentrals often arranged unequidistantly, and a pair of scutellars.

Front leg: Cx₁ either much emarginate on inner anterior surface, or ornamented with specialized bristles or setae at anterodistal margin, or both; trochanter often deformed, and bearing specialized bristles; posteroproximal surface of f₁ bare or with short stiff spines directing dorsoproximally; tarsus, at least on 4 distal tarsomeres, free from pollinosity, and with setulae tightly appressed to integument, so that these tarsomeres seemingly to be covered with thin coating of gelatinous substance; empodium and pulvilli practically absent, i.e. each strongly reduced into a minute protuberance which can be detected only by careful examination under high magnification; basitarsus shortened, less than 1/2 length of 2nd tarsomere, strongly enlarged ventrally towards tip, so roughly triangular in shape; 2nd tarsomere slender, often sinuous, characterized by a ventral denticle at base and often with subbasal ventral emargination. Middle and hind legs long and slender; cx₂ with or without specialized bristles at anterodistal margin; f₂ and f₃ without strong bristles except for ordinary preapical ones (rarely with a few specialized spines towards base); gelatinous appearance of tarsi and reduced empodia and pulvilli as in front leg.

Wing much ornamented in many species; at least discal crossvein strongly sinuous in S-shape or running posteriorly parallel to M₁, and in all the species anterior portion of the crossvein embracing a jet-black stripe or nodule outside; 1 to several accessory cellulae often formed at anterodistal portion of discal cell. Abdomen ordinary short to much elongate, modification of pregenital segments variable, cercus elongate lobe-like, with longish marginal ciliation.

♀. Resembling males, but wings and legs simple, without special ornamentations; appressed vestitures of tarsomeres and reduced empodia and pulvilli as in males.

The *fenestratus*-group, here defined, includes a known species, *D. flexus* TAKAGI, 1972 and the following seven new species from Nepal. This group is separated into three subgroups, namely the *fenestratus*-, the *flexus*- and the *pulchripennis*-subgroups. At present the group is known only from the Nepal Himalaya. The group is much diversified in various characters, but the species assembled in this

group all have the extremely atrophied empodia and pulvilli and the polished tarsi with appressed setulae in both sexes. *D. ramulosus* Takagi, 1972 described from Nepal seems to be related to this group (see the *fenestratus*-subgroup).

The *fenestratus*-subgroup

♂. Vertical bristles absent, 3rd antennal segment more or less elongate, tapering to pointed tip, and bearing apical arista; palpus small, almost as long as clypeus, dark brown, glittering bluish, rather tightly applied to rostrum. Thoracic chaetotaxy: Distance between 3rd and 4th dorsocentrals more than $1.5\times$ of that between 2nd and 3rd; posthumeral bristle nearer to transverse suture than to humeral bristle; proepisternum with a few yellow hairs on lower portion.

Front leg: Cx_1 strongly emarginate on inner surface, almost bare except a dense brush of stiff tawny bristles at anterodistal margin; f_1 moderately slender, sparsely clothed with only short fine setulae; t_1 slender, flattened on posterodorsal surface with 2 short (one at basal $1/4$, the other at apical $1/3$) posterodorsal, 3 similar anterodorsal, and some posteroventral bristles; basitarsus almost triangular in shape, expanded portion weakly concave behind and with 1–2 minute setae posterodistally; 2nd tarsomere long and slender, shallowly emarginate on ventral surface towards base, and projecting into a basal denticle; apical tarsomeres slender. Middle leg: Cx_2 with a spine-like cluster of strong tawny bristles at anterodistal margin; f_2 slender, slightly flattened, weakly curving ventrally on basal portion, and only short-setose; t_2 somewhat flattened and slightly sinuous ventrally, with each 2 anterodorsal and posterodorsal short bristles. Hind leg: f_3 plain, short-setose with 1–2 anterior bristles on apical $1/4$; tarsus simple.

Wing elongate, pale greyish, R_{4+5} gently bisinuate, M_1 also sinuate at middle; discal crossvein strongly curved in S-shape, first strongly waved inwards embracing a jet-black oval nodule, then strongly waved outwards; several veinlets connecting anterior marginal vein of discal cell and part of discal crossvein around anterior margin of the nodule, consequently minute accessory cellulae formed by them. Halter entirely yellow.

Abdomen cylindrical and much elongate for *Diostracus* males, a little longer than $2.5\times$ of thoracic length; abdominal setae all short and fine, except for fine longish yellow hairs at sides of 1st tergum; 4th sternum with a small median projection at posterior margin. Genitalia moderately large, not projecting above, cercus lobate, densely clothed with brownish hairs on outer (normally dorsal) surface, and tightly applied to the ventral portion of 5th segment.

This subgroup is best characterized by the absence of vertical bristles, the peculiar modification around discal crossvein, and the posteriorly shifted posthumeral bristles. Although the subgroup in strict sense includes the following two new species from Nepal, *D. ramulosus* TAKAGI described from Godavari near

Kathmandu seems to be related to the group. This affinity is suggested by the small male palpi, the position of the posthumeral bristles, the modification around the discal cell. *D. ramulosus* is, however, much different from the *fenestratus*-subgroup by the ornamented front trochanters, the narrow front basitarsus, the produced posterodistal corner of discal cell and the short, stout, drooping cerci. Moreover, it is uncertain whether *D. ramulosus* belongs to the *flexus*-group or not, as the character state of the tarsal vestiture and the pretarsal structure of this species have not been studied in detail.

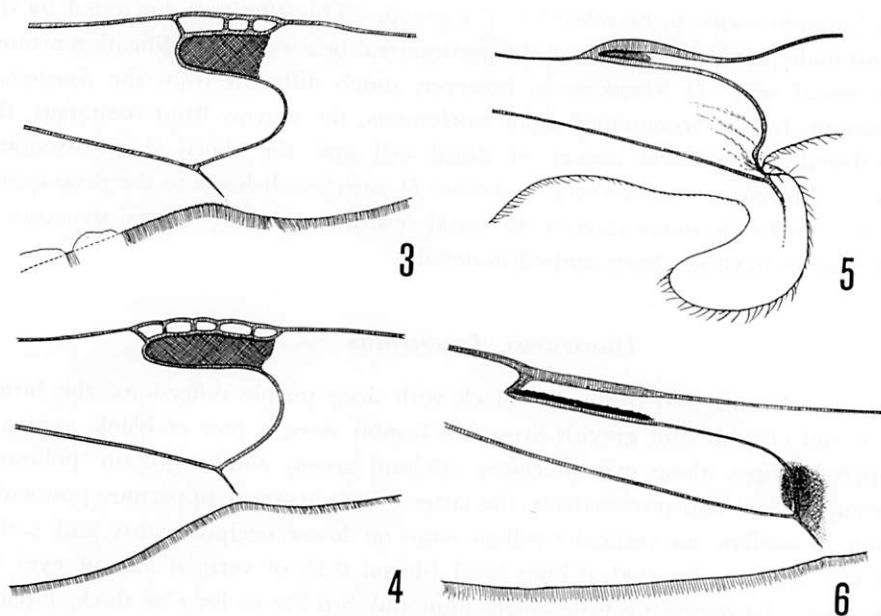
***Diostracus fenestratus* sp. nov.**

♂. Vertex and frons dull black with deep purple reflections, the latter, face and clypeus dull greyish brown in frontal view, a pair of black, ventrally tapered stripes along eye margins; occiput green, thinly greyish pollinose, strong ocellars and postverticals, the latter a little nearer to uppermost postocular than to ocellar, no verticals; yellow setae on lower occiput scanty and rather short. Antenna inserted at high level (dorsal 0.15 of vertical axis of eye) for *Diostracus*, 1st segment a little longer than 2nd, 3rd $2\times$ as long as thick, tapered beyond the middle to pointed apex, from which arista arises. Palpus small, $3\times$ as long as wide or $1/3$ as long as eye height.

Thorax green, mesoscutum with a pair of narrow black subdorsal stripes, tinged with bronze at sides, densely whitish pollinose from humeral callus to notopleural depression, and on postalar callus, thoracic pleura thickly ash grey pollinose. Five anterior dorsocentrals short and fine, distance between 2nd and 3rd dorsocentrals nearly $2\times$ of that between 1st and 2nd, or between 3rd and 4th. Proepisternum with 2 fine yellow hairs on lower portion.

Front leg: Posterior surface of f_1 almost bare; t_1 with ca. 5 posteroventral black bristles, the longest one a little shorter than t_1 width; basitarsus slender for basal $1/3$, then abruptly dilating beneath, forming a broad triangular lobe, at preapical portion $3\times$ as thick as its basal portion, densely clothed with short, brown setulae on anterior surface of the lobe, and bearing 2 short anterodistal and 1 shorter posterodistal setae; 2nd tarsomere $2.5\times$ as long as basitarsus, with a posteroventral swelling on subbasal emarginate portion. Middle leg: T_2 flattened, but a little thicker near tip, on apical $1/2$ densely clothed with stiff, erect, black setae on posterior to posteroventral surfaces, the setae shorter basally, but longer (ca. as long as t_2 width) and strongly curled dorsally towards tip of t_2 . Hind leg: F_3 with 1–2 short anterior bristles besides a preapical one.

Wing (Fig. 3) narrow, greyish, with hind margin weakly emarginate around tip of M_3 ; inward wave of discal crossvein rather wide, 3 accessory cellulae formed at anterodistal corner of discal cell; blackish nodule $2.6\times$ as long as wide, or $2/3$ as long as distance between tips of discal crossvein.



Figs. 3-6. Male right wings, posteromedian portion.

3. *Diostracus fenestratus* sp. nov., 4. *Diostracus reticulatus* sp. nov., 5. *Diostracus pennilobatus* sp. nov., 6. *Diostracus nishidai* sp. nov.

Abdomen subshining dark green, thinly greyish pollinose on discs of terga, densely ash grey pollinose on sides of terga, epandrium and sterna.

Length: Body 8.9 mm; wing 9.5 mm.

Holotype ♂, Chiaksila Kharka (2,730 m), 27°26'N, 86°57'E, E. Nepal, 16. vii. 1981 (J. EMOTO).

Remarks: *D. fenestratus* is quite distinct from the known species by the peculiar ornamentation around discal crossvein. On this respect, it somewhat resembles *D. ramulosus* TAKAGI, 1972, but the latter species has the posterodistal corner of discal cell produced distally, and many other characters including structure of front basitarsus and leg vestiture quite different from those of the new species. The most close ally of *fenestratus* is the next new species.

Diostracus reticulatus sp. nov.

In every respect much resembling the preceding species but differing from it as follows.

♂. Posteroventral surface of f_1 rather densely clothed with short, but stiff setulae from subbasal portion to around the middle; front basitarsus dilated beyond the middle, front 2nd tarsomere without posteroventral

swelling on subbasal emarginate portion; t_2 only short-setose on posterior to posteroventral surfaces; wing (Fig. 4) more weakly undulate on hind margin, black nodule at discal crossvein longer, $4.6-5.0 \times$ as long as wide, or $0.86-0.89 \times$ as long as distance between tips of discal crossvein; inward wave of discal crossvein deeper and narrower; 5 accessory cellulae formed at anterodistal corner of discal cell; cercus seemingly to be shorter-setose, but as its tip concealed under 4th sternum, exact vestiture is not examined. One specimen has a minute, fine vertical setula on right side on head.

Length: Body 8.2–8.9 mm; wing 8.9–9.3 mm.

Holotype ♂, Chitrey (2,420 m), 27°07'N, 87°24'E, E. Nepal, 16. vi. 1972 (H. MAKIHARA).

Paratypes: 2 ♂♂, Basantapur (2,300 m)–Chitrey (2,420 m), 16. vi. 1972 (H. MAKIHARA) (KMNHIR 100025).

Remarks: *D. reticulatus* is apparently most closely related to the preceding species, but it is easily distinguished from the latter by the characters stated above, particularly by the presence of 5 accessory cellulae of the wings.

The *flexus*-subgroup

♂. Frons not produced forwards; vertical bristles short or moderately long; 3rd antennal segment a little longer than thick; palpus enlarged, loosely applied on rostrum, much longer than clypeus, $2/3$ as long as eye height, blackish brown and glittering bluish.

Thoracic chaetotaxy: Anterior 4 dorsocentrals short or moderately long, proepisternum with upper and lower groups of fine yellow hairs.

Front leg: Cx_1 moderately thick, its anterior surface towards tip raised as a weak ridge, of which inner slope is clothed with fine yellow hairs, anterior surface of Cx_1 with or without a cluster of long yellow hairs towards base, no strong anterodistal spine on Cx_1 ; front trochanter projected ventrodistally into a setiferous conical or lamellate process; f_1 simple in shape, sparsely clothed with fine short pale hairs of which those on anteroventral surface may be longish; t_1 with 4 strong anterodorsal and 1 strong and 0–2 weak posterodorsal bristles, posteroventral bristles present or absent, but posterior preapical bristles not differentiated; basitarsus triangular in shape, with posterodistal setae short and simple, 2nd tarsomere with a basal dentation. Middle leg: Cx_2 and trochanter simple; f_2 a little flattened, weakly curved ventrally beyond subbasal portion, clothed beneath with sparse, short, fine yellow hairs, and several anterior bristles towards tip; t_2 flattened, with each 2–3 anterodorsal and posterodorsal bristles, and long ciliated on apical $1/2$. Hind femur with short, fine, pale hairs beneath.

Wing faintly greyish, with semiopaque whitish area at least at apical portion of cell M_1 and along discal crossvein; M_1 arched anteriorly in various degrees;

discal crossvein running posteriorly close to M_1 for a considerable distance, then gently curving to posterior margin of wing; a much slender, jet-black band in cell M_1 attaching to anterior portion of discal crossvein.

Abdomen rather elongate, but not so much as in the *fenestratus*-subgroup, with moderately large genitalia; long hind-marginal bristles of 1st tergum yellowish; 4th sternum with a triangular depression on hind margin, and bearing a small, short, dense, yellow hair-brush near the anterior corner of depression. Cercus moderately broad, applied to ventral surface of 5th segment, marginally ciliated with pale setae.

The *flexus*-subgroup here defined includes *D. flexus* TAKAGI, 1972, *D. nishidai* sp. nov. and *D. pennilobatus* sp. nov. This subgroup is distinct from two other subgroups by the outwardly produced, not S-shaped, discal crossvein, the weak anterodistal ridge on front coxa, the ciliation at distal 1/2 of middle tibia, the semiopaque white markings of wings and the structure of the 5th sternum in the males. Most of these character states are unique to this subgroup.

The subgroup is clearly differentiated into two sections, including *flexus* and *nishidai*, and *pennilobatus*, respectively.

Diostracus flexus TAKAGI

Diostracus flexus TAKAGI, 1972, J. nat. Hist., 6: 521-546, (type-locality: Nepal, 27°58'N, 85°00'E, 11, 100 feet).

D. flexus was described on basis of 2 males and 2 females from high altitude just north of Kathmandu. Our material almost assignable to this species consists of two distinct forms, one from Tragdobuk near the type-locality of *flexus* and the other from Thudam area. These two forms much closely resemble each other, but can be sharply distinguished in the male by the shapes of front basitarsi, the basal portion of the middle tibia and the genitalia. Although I tentatively identify the form from Tragdobuk with *flexus* and describe that from Thudam area as a new species, probability that these two are local variations of *flexus*, or that both represent two species distinct from *flexus* can not be excluded.

D. flexus was described in details by TAKAGI, so that I mentioned only the differences from the next new species, and some additional features based on our specimens (1♂1♀).

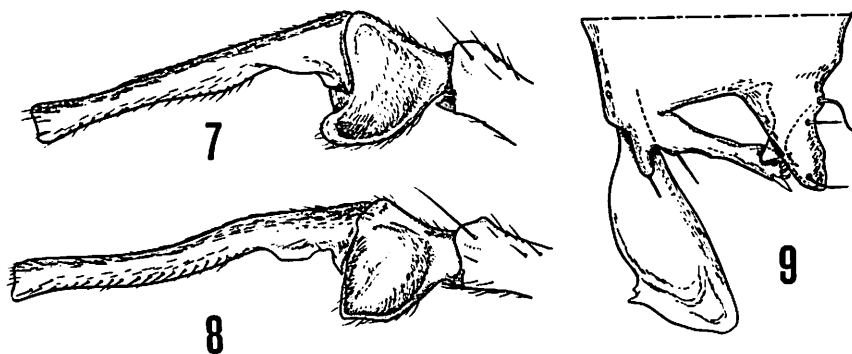
♂. Third antennal segment pointed to apical arista; palpus golden-glittering with a slightly bluish tinge; ventroproximal curved process of front trochanter shorter; front basitarsus (Fig. 7) with a short, rounded ventrodistal lobe; t_2 without posteroventral swelling subbasally; male genitalia with main lobe of surstylus (VL of Fig. 7-E of TAKAGI, 1972) broad, roundly truncate apically. A ratio of length of posterior margin of discal cell distal to the level of the subbasal

bend to the width of the cell at the level is 4.2 in the photograph given by TAKAGI, 1972 and 5.22 in the specimen from Tragdobuk.

♀. Quite as in the next species. The association of the following female specimen with the above-mentioned male is based on their localities close to each other.

♂ and ♀. The following characters are shared with the next new species. Upper and lower portions of proepisternum each with a clump of several long yellow hairs; distal tarsomeres free from pollen, with appressed setulae giving bare, not haired, appearance to the tarsomeres; empodia and pulvilli atrophied to minute lobes.

Specimens examined: 1♂, Tragdobuk (2,950–3,180 m), 15. vii. 1981 (J. EMOTO); 1♀, Jumbesi Khola (3,450 m), 11. viii. 1981 (J. EMOTO).



Figs. 7–8. Basal 2 tarsomeres of ♂ left front tarsi; fig. 9. Ventrodistal portion of ♂ genitalia.

7. *Diostracus flexus* Takagi, 8 and 9. *Diostracus nishidai* sp. nov.

Diostracus nishidai sp. nov.

♂ (Fig. 6). Closely resembling *D. flexus* TAKAGI, but differing as follows. Third antennal segment in general most produced slightly beyond the base of subapical arista, rarely almost at the apical arista; palpus glittering bluish to silvery blue; ventroproximal curved process of front trochanter longer; front basitarsus (Fig. 8) ventrodistally not roundly lobate, but distinctly angulate; t_2 subbasally with a weak posteroventral swelling clothed with a few fine short erect hairs; a ratio of length of posterior margin of discal cell distad to the level of the subbasal bend to width of the cell at the bend is (minimum 3.9) 4.6–6.0 (maximum 6.2) ($\bar{x}=5.2$, $\sigma_n=0.5$, $N=23$); main lobe of surstylus (Fig. 9) slender, and evenly tapering to the incurved, pointed tip.

Length: Body 5.4–6.2 mm; wing 7.5–8.0 mm.

♀. No difference from *flexus* female is detected.

Length: Body 5.3–6.0 mm; wing 7.6–8.6 mm.

Holotype ♂, Thudam (3,500–3,800 m), 27°45'N, 87°31'E–27°46'N, 87°33'E, E. Nepal, 18. vi. 1972 (Y. NISHIDA).

Paratypes: 15♂♂10♀♀, same locality as holotype, 18–30. vi. 1972 (H. SHIMA, Y. NISHIDA, J. EMOTO, including Malaise trap captures) (KMNHIR 100026–32); 6♂♂1♀, N E of Thudam (4,000 m), 25. vi. 1972 (H. SHIMA, J. EMOTO) (KMNHIR 100033–34); 1♂3♀♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (Y. NISHIDA, J. EMOTO); 1♂, Topke Gola (3,250 m), 14. vii. 1972 (H. SHIMA); 1♀, Topke Gola (3,700 m), 9. vii. 1972 (J. EMOTO).

***Diostracus pennilobatus* sp. nov.**

Coloration and general habitus similar to those of *flexus*.

♂. Third antennal segment oval, $1.1\text{--}1.3\times$ as long as thick, with subapical arista; palpus $3.6\times$ as long as wide, rather strongly tapered beyond apical $1/4$ to roundly produced apex. Proepisternum with upper and lower groups of 2–3 fine pale hairs, the latter group arranged in a vertical row.

Front leg: Cx_1 shallowly emarginate on anterior surface beyond the middle, the surface sparsely clothed with fine yellow hairs proximally, forming a bluntly ridged keel towards tip, inner surface of the keel rather densely clothed with fine pale hairs, no prominent hairs or setae along distal margin of Cx_1 ; front trochanter yellow, produced into a large triangular lamella, which is concave on posterior surface, clothed with a group of a few setulae beneath, and bearing 2 minute points at tip, the anterior one with a few minute spinules, the posterior one curved forwards at tip; f_1 much sparsely clothed with short, fine, pale hairs; posterodorsal surface of t_1 bearing a strong bristle at distal $1/3$, posteroventral setae of t_1 strong; basitarsus as long as thick, its ventral lobe much concave on posterior surface, with posterodistal corner rounded, distal margin weakly convex, no prominent posterodorsal or dorsodistal setae; 2nd tarsomere $3\times$ as long as basitarsus, weakly sinuate ventrally at middle, then dorsally at distal $1/4$, with its ventral surface produced into a subbasal transverse denticle and a weak short midventral swelling, and clothed with suberect setulae beyond the middle. Middle leg: F_2 rather thick on basal $1/2$, gradually tapered apically, gently sinuate ventrally beyond basal $1/4\text{--}1/3$, bearing 2–3 strong anterior bristles on apical $1/2$, the most distal one strongest, as long as maximum thickness of f_2 ; f_2 also sparsely ciliated with fine, short pale anteroventral hairs in addition to ventral to posteroventral similar hairs. T_2 much compressed laterally, weakly bisinuate on apical $1/3$, shining brownish purple on dorsal surface; distal $1/2$ of t_2 ornamented with the following vestiture; a sparse posterodorsal ciliation of erect black fine setae longer towards tip of t_2 (the longest $1/5$ as long as t_2), a posteroventral ciliation of similar but shorter and pale setae, which is apically alternated by a much dense brush con-

sisting of basally subpennate, apically curled, long, black setae (the longest seta $1/4$ as long as t_1), the brush decreasing its length at apex and continuing to that on apical portion of anteroventral surface, an anteroventral and a posteroventral preapical bristles much longer and curiously curved, a dense anteroventral ciliation of long, curled black setae (the longest setae roughly $1/3$ as long as t_2) for middle $1/4$ of t_2 ; a short anterior ciliation of short, yellow, weakly curled hairs at subapical portion of t_2 . Middle basitarsus with a posterior row of sparsely set black bristles, of which the most proximal one is straight ($1/2$ as long as basitarsus), others much decreasing their lengths towards tip of basitarsus. Hind leg: F_3 sparsely clothed ventrally with erect, fine, pale hairs ($2/3$ as long as f_3 thickness in length); t_3 with a posteroventral ciliation of ca. 10 fine short, erect, black setae on basal $3/5$ (the setae bent towards tip of t_3), anteroventral ciliation of shorter, suberect, straight setae, and an anterodorsal row of ca. 5 bristles longer towards tip.

Wing shape (Fig. 5) most peculiar in *Diostracus*, hind margin of wing produced into a narrow, proximally curved, finger-like lobe which receives tip of discal cell and M_3 , the margin also slightly concave proximal to the lobe, and weakly arched distal to it; fringe of distal margin of lobe long, that on its proximal margin almost reduced. Wing distinctly greyish, with the following 2 semiopaque white areas; a long broad stripe along anterior margin of discal cell, expanding around discal crossvein and narrowly extending along basal $1/3$ of M_1 , posterior margin of wing to the arched portion, and to distal margin of the hind marginal lobe; a small curved mark at tip of cell M_1 ; wing also paled narrowly along vein R_{2+3} and R_{4+5} , and on discal cell and area posterior to the cell. Venation: First basal cell extraordinarily short, ending much proximal to tip of anal cell; R_{4+5} strongly sinuate towards R_{2+3} beyond middle, then gently diverging from the latter; discal crossvein running close to M_1 for its anterior $1/3$, there M_1 is thickened and a slender jet-black brand occupies the interspace between the two veins; then discal crossvein gently curving towards posterior margin of wing and entered into base of hind-marginal lobe. External appearance of abdomen almost as in *flexus*.

Length: Body 5.6–6.3 mm; wing 7.0–7.4 mm.

♀. Much resembling *flexus* female. Third antennal segment oval, arista distinctly subapical (pointed and arista almost apical in *flexus*); mesoscutum more shining; proepisternal pile few in number; cx_1 as in male (in *flexus* with longish hairs on anteroproximal portion, and anterodistal ciliation present); and an anterodorsal bristle of t_1 at basal $1/3$ stronger; f_2 with black, fine, short, anteroventral hairs; cell R_{4+5} wider; 1st basal cell and anal cell ending at the same level; discal crossvein a little recurrent, outwardly arched, then posterodistal corner of discal cell obtuse.

Length: 6.0–6.4 mm; wing 7.4–7.8 mm.

Holotype ♂, Salpa La (2,800–3,000 m), 27°27'N, 86°55'E, E. Nepal, 23. vii. 1981 (J. EMOTO).

Paratypes: 2♂♂, same data as holotype; 4♀♀, same locality (2,880–3,050 m), 29. vii. 1981 (J. EMOTO, including Malaise trap captures) (KMNH IR 100038); 2♂♂1♀, Chiaksila Kharka (2,800 m), 13–14. vii. 1981 (J. EMOTO) (KMNHIR 100035–36); 3♂♂2♀♀, Lamjura La (3,200–3,400 m), 16. viii. 1981 (J. EMOTO) (KMNHIR 100037).

Other material: 1♀, Papun (2,100 m), 15. vii. 1972 (H. SHIMA).

Remarks: *D. pennilobatus* is easily distinguished from the known species of *Diostracus* by the curious lobe of the male wing. The lobe is flexed over main portion of wings in most specimens, but its normal condition in life is unknown.

D. pennilobatus has not been collected together with *D. flexus* and *D. nishidai*. The female specimen from Papun mentioned above is almost identical with those from the type-locality, but it is uncertain whether it really belongs to the present species or not.

The *pulchripennis*-subgroup

♂. Clypeus moderately projecting forwards; vertical bristles present; 3rd antennal segment oval, bluntly rounded apically, with subapical arista; palpus large, broad, much longer than clypeus, glittering bluish to dark golden. Distance between 1st and 2nd dorsocentrals more than $1.5\times$ distance between 2nd and 3rd dorsocentrals; posthumeral nearer to humeral than to transverse suture; proepisternum with each (1)–2 yellow hairs on upper and lower portions.

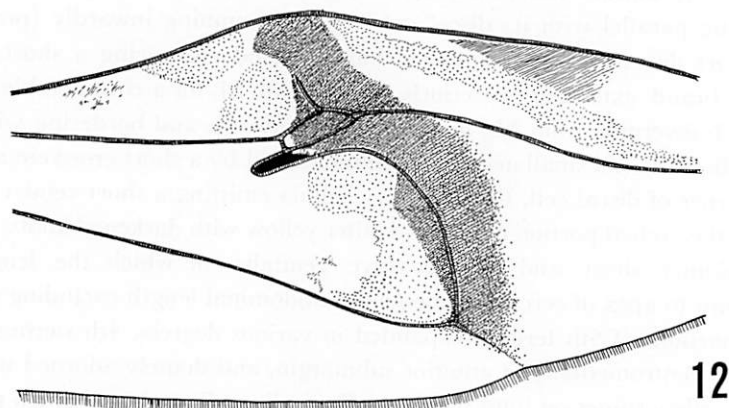
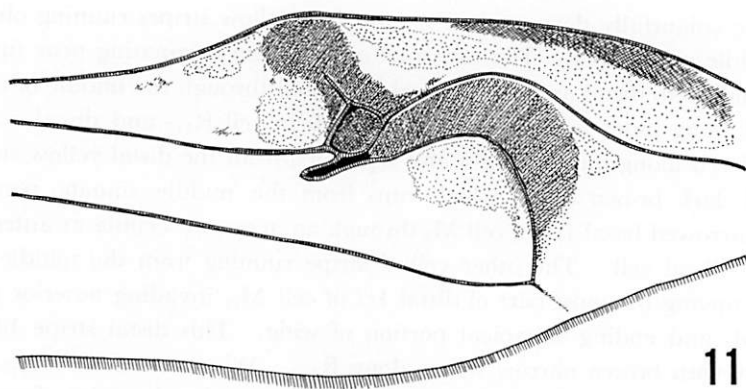
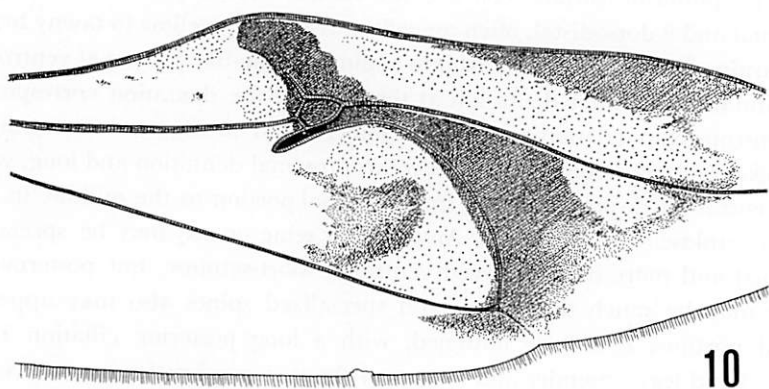
Front leg: Cx₁ stout, anterior margin arched forwards in profile, densely silvery white pollinose, practically bare (only with a few fine short pale pile) except on anterodistal margin which is clothed with fine pale setae and armed with a strong spine-like yellow bristle; trochanter produced ventroproximally, forming an inner (anteroventral) projection consisting of glued yellow hair brush and an outer (posteroventral) rather lamellate process adorned with rigid, curved, often flattened, spine-like bristles; f₁ much thickened, but strongly tapered apically, sparsely clothed with short setulae, almost naked on anterior surface, and with a group of dorsoproximally directing, stiff setulae on ventral to posteroventral surfaces on proximal portion; t₁ also stout, much thicker than $2\times$ t₃ thickness, more or less tapering to both ends, bearing 3–(4) anterodorsal black bristles, 1 black posterodorsal bristle at the middle, and 2 curiously waved, brown to tawny, preapical posterodorsal bristles, t₁ also clothed posteroventrally with dense fine, erect, golden yellow hairs on apical 2/3, these hairs becoming longer and more strongly curled apically towards base of t₁; basitarsus short, much dilated above and beneath distally, almost as long as apically deep, its anterior surface clothed with decumbent setae which are longer towards distal

margin, its posterior surface concave on ventral lobate portion, bearing 1-2 anterodistal and 2 dorsodistal, often apically waved, long, yellow to tawny bristles; distal margin of basitarsus produced into a minute spine-like process at ventrodistal corner, and into a blunter dentation at the middle, the dentation corresponding to the ventroproximal dentation of 2nd tarsomere; 2nd tarsomere almost straight, a little thicker on basal 1/2, with a small ventroproximal dentation and long, weakly raised, ventral black-pruinose area from subbasal portion to the middle, its distal 1/2 short setulose. Middle leg: Anterodistal setae on cx_2 may be specialized; f_2 flattened and more or less curved ventrally, short-setulose, but posteroventral ciliation may be much developed, and specialized spines also may appear on proximal portion; t_2 a little flattened, with a long posterior ciliation in one species. Hind leg: Slender and long; f_3 without strong bristles except preapical ones.

Wing colourfully decorated; 2 semiopaque yellow stripes running obliquely from middle costal area. The proximal one of them originating near tip of R_1 and extending to distal area of enlarged discal cell through the middle of cell M_1 , bordered along inner margin with dark clouds in cell R_{4+5} and discal cell, and also bordered along outer margin and separated from the distal yellow stripe by 3-shaped dark brown cloud which runs from the middle sinuate portion of R_{4+5} to narrowed basal 1/2 of cell M_3 through an accessory cellula at anterodistal corner of discal cell. The other yellow stripe running from the middle of cell R_{4+5} , occupying the most part of distal 1/2 of cell M_1 , invading anterior portion of cell M_3 and ending subapical portion of wing. This distal stripe bordered anteriorly with brown narrow stripe along R_{4+5} . Wing venation: R_{4+5} arched anteriorly at middle narrowing cell R_{4+5} , then gently diverging from R_{2+3} , or running parallel with it; discal crossvein first running inwardly (proximally) for a short distance, then making a hairpin bend embracing a short, slender, jet-black band, extending posteriorly parallel with M_1 for a considerable distance, and much diverging from M_1 , gently arched outwards and bordering wide distal area of discal cell; a small accessory cellula formed by a short crossvein at anterodistal corner of discal cell, this accessory cellula emitting a short veinlet directing towards the arched portion of R_{4+5} . Halter yellow with darkened knob.

Abdomen short, and with massive genitalia, of which the length from epandrium to apex of cercus is subequal to abdominal length excluding genitalia; lateral portions of 5th tergum expanded in various degrees, 4th sternum weakly produced ventromedially at anterior submargin, and densely adorned with thick, curved, yellow spines on hind margin. Genitalia: Epandrium much projecting above beyond the level of dorsal margin of abdomen; cercus of rather broad elongate lobe marginally ciliated with long yellow curved setae.

The *pulchripennis*-subgroup is richly characterized by various structure, particularly by the peculiar ornamentation of front trochanter, the two curled



Figs. 10–12. Male right wings, posteromedian portion posterior to vein R_{4+5} .
10. *Diostracus pulchripennis* sp. nov., 11. *Diostracus pretiosus* sp. nov., 12. *Diostracus emotoi* sp. nov.

preapical posterodorsal bristles on front tibia, the short veinlet from the accessory cellula and unique colour pattern of the wing, and the spinose hind margin of the 4th abdominal sternum. This subgroup includes the following three closely allied species, which are, to my great surprise, all sympatric near Chiaksila Kharka.

The female specimens of this subgroup are represented in our collection. They seem to be classified into more than one species, but the definite differences among them are not detected, and consequently, they can not be assigned for the present to their proper males. The females have shorter palpi, simple shorter-setose slender legs without ornamentations, yellow tinged wings with normal venation and posterodistally produced discal cells. They are similar to the males in the oval 3rd antennal segment, tarsi with appressed setulae and absence of pulvilli and empodia.

***Diostracus pulchripennis* sp. nov.**

♂. Frons, face and clypeus shining dark green, thinly pollinose, eye margin blackish; occiput green, rather thickly greyish pollinose; head chaetotaxy ordinary for *Diostracus*, golden yellow hairs on lower occiput moderately dense and longish. Relative lengths of 1st to 3rd antennal segments 10: 5: 8; 3rd segment $1.3-1.4 \times$ as long as thick, with subapical arista. Palpus $0.6 \times$ as long as eye height, $2.5 \times$ as long as wide, slightly dilating towards apical $1/4$, then tapered to rounded apex, and glittering dark bluish.

Mesoscutum subshining green, with a pair of narrow dark brown stripes between dorsocentral rows, the stripes $2/3$ as wide as ground colour band between them, sides of mesoscutum tinged with bronze, humeral callus to notopleural depression dull white, postalar callus dull greyish brown; pleura rather thickly ash grey pollinose, but meso-anepisternum subshining. Five anterior dorsocentrals short.

Front leg: Anterior surface of cx_1 densely silvery pollinose; cx_1 with a moderately strong anterodistal brown bristle; spines on posteroproximal portion of front trochanter strong; f_1 with several short setulae on ventroproximal portion, ca. 15 blunt-tipped short spine-like setulae arranged irregularly in two rows on posteroproximal portion; posteroventral golden yellow hairs of t_1 rather sparse; basitarsus with ventrodiscal angle distinctly pointed as a curved spine, with a small, but prominent yellow tubercle formed at base of the angle, blunt mediodistal protuberance, and bearing 0-1 anterodistal and 2 posterodistal bristles almost straight or only slightly waved. Middle leg: F_2 with a posteroventral row of short, fine, yellow hairs on middle $1/3$, the longest hairs at most $2/3$ as long as f_2 width; t_2 only short-setulose, with each 2 anterodorsal and posterodorsal bristles in addition to preapicals.

Wing venation (Fig. 10): M_1 gently bisinuate, outward wave of discal crossvein rather even; accessory cellula $1.5-1.7 \times$ as long as wide. Wing marking: No dark cloud in cell R_{2+3} , large dark cloud separating two yellow stripes distally continuing to subapical dark area along M_1 and expanding along posterodistal corner of discal cell; dark cloud in subapical portion of discal cell prominent.

Abdomen: First to 5th terga shining green, and greyish pollinose at sides; epandrium blackish brown, thinly greyish pollinose; lateral portions of 5th tergum produced into a posteroventrally directed, tapered, long process, which is $3/5$ as long as height of the tergum between dorsal margin to sublateral shining black spots; 4th sternum with a large anterior submarginal protuberance and a much smaller posterior marginal one.

Length: Body 5.7–6.3 mm; wing 8.0–8.4 mm.

Holotype ♂, Salpa La (3,000–3,050 m), $27^{\circ}27'N$, $86^{\circ}55'E$, E. Nepal, 29. vii. 1981 (J. EMOTO).

Paratypes: 1♂, same data as holotype; 4♂♂, same locality (2,880 m), 29. vii. 1981 (J. EMOTO, Malaise trap); 6♂♂, Chiaksila Kharka (2,800 m), 13–20. vii. 1981 (J. EMOTO) (KMNHIR 100039–40).

Remarks: *D. pulchripennis* is distinguished at once from all the known members of the genus by the richly decorated wings; from two other members of the *pulchripennis*-subgroup described below it is distinguished by the simple middle legs ornamented only with a short posteroventral ciliation on the femora.

Diostracus pretiosus sp. nov.

♂ (Fig. 11). Resembling *D. pulchripennis*, but differing in the following respects. Anterodistal yellow spine on cx_1 weaker; posteroproximal setulae on f_1 numerous, distributed in wider area; t_1 thicker; anterodistal and dorsodistal yellow bristles on front basitarsus stronger and distinctly waved beyond the middle; posteroventral ciliation of f_2 short as in *pulchripennis*, but continuing from base to tips of f_2 , consisting of yellow setae on basal $2/5$, black stiff setulae on apical $3/5$; t_2 with a posterior ciliation of long, erect, fine setae on basal $2/3$, the longest towards base $1.5 \times$ as long as t_2 width; M_1 more strongly bisinuate; outward wave of discal crossvein strongly curved at the middle; accessory cellula larger; 2 small dark clouds in cell R_{2+3} situated a little proximal to R_1 tip and distal to it, respectively, the more distal cloud continuing to that in cell R_{4+5} ; 3-shaped dark cloud not extending to posterodistal margin of discal cell; no prominent dark cloud in subapical portion of discal cell; lateral margin of 5th abdominal tergum only slightly expanded, not exceeding below beyond the setiferous posterior margin of 4th sternum, bearing a few longish yellow submarginal hairs and dense greyish brown marginal pile.

Length: Body 5.2–5.9 mm; wing 7.8–8.1 mm.

Holotype ♂, Salpa La (3,000–3,050 m), 27°27'N, 86°55'E, E. Nepal, 29. vii. 1981 (J. EMOTO).

Paratypes: 2♂♂, Ponktable (1,900 m)–Buze (2,800 m), 22. vii. 1972 (H. SHIMA); 2♂♂, same data as holotype (KNMHIR 100041); 1♂, same locality (2,880 m) and data (J. EMOTO, Malaise trap); 1♂, Buze (2,800 m)–Chouki (2,700 m), 23. vii. 1972 (H. SHIMA).

Remarks: *D. pretiosus* is at once distinguished from *D. pulchripennis* by its long-ciliated middle tibia.

***Diostracus emotoi* sp. nov.**

♂ (Fig. 12). Much resembling *D. pulchripennis*, but differing as follows. Anterodistal yellow spine on cx_1 much stronger; spines on posteroproximal process of front trochanter a little flattened; posteroproximal setae on f_1 longer; ventrodistal process of front basitarsus blunter, mediodistal protuberance prominent; f_2 weakly raised ventrally at basal 1/4, there f_2 bearing a row of ca. 10 short, stiff, black spines and 1–3 long, erect, yellow, ventral bristles; f_2 also densely ciliated posteroventrally with long, suberect, yellow setae except on basal 1/4, these setae gently curved towards tip of f_2 ; accessory cellula elongate, $3\times$ as long as wide; distal opaque yellow stripe not invading anteromedian area of cell M_3 , no dark cloud on subapical portion of discal cell, lateral projection of 5th tergum a little shorter; anterior submarginal protuberance of 4th sternum weaker.

Length: 5.9–6.9 mm; wing 8.5–9.2 mm.

Holotype ♂, Chiaksila Kharka (2,800 m), 27°26'N, 86°57'E, E. Nepal, 13. vii. 1981 (J. EMOTO).

Paratypes: 1♂, same data as holotype (KNMHIR 100042); 1♂, Papun (2,100 m)–Thurukpa (2,600 m), 11. vi. 1972 (J. EMOTO).

Remarks: *D. emotoi* is distinct from the preceding two species of this subgroup in the ornamentation on basal portion of the middle femur.

The *impulvillatus*-group

♂. Clypeus not projecting forwards; vertical bristles almost as strong as postverticals; postocular ciliation black down to the middle level of eye, lower occipital yellow hairs fairly dense and long. Antenna short, 3rd segment as long as thick, apically rounded with subapical arista or pointed with apical arista. Palpus moderately large, ca. $0.4\times$ as long as eye height, oval to somewhat elongate, densely silvery pollinose, with longish black setulae on dorsal to apical margins. Rostrum moderately large.

Thorax rather sombre in colour, pleura densely dark grey pollinose; 4 dorsocentrals fairly strong, 1–2 humerals, 1 posthumeral, 2 notopleurals, 1 supra-

alar, 1 postalar, 2 scutellars strong; scutellum often with an additional outer pair of fine setulae; proepisternum clothed with upper and lower groups of several fine yellow hairs.

Legs entirely black with greenish tinge, densely pollinose as thoracic pleura. Tarsi mostly pollinose, its setulae subdecumbent, not appressed; pulvilli reduced, practically absent; empodia of ordinary length, subequal to 5th tarsomere thickness; claws often much lengthened, especially on front leg. Front leg: Cx_1 silvery pollinose as prosternum, with its inner surface occasionally emarginate and always armed subapically with 1-2 (several in one species) strong, erect, black, spine-like bristles, anterior surface of Cx_1 clothed with fine pale hairs and bearing an anterodistal setae; front trochanter without ornamentation; f_1 rather stout, bearing beneath 1-2 rows of fairly strong bristles, and occasionally with posterior bristles towards base; t_1 slender, always with posteroventral bristles; basitarsus ca. $0.5-1.0 \times$ as long as 2nd tarsomere, various in shape, apically more or less thickened, sinuate posteriorly, weakly concaved on posterodistal surface, or much dilated apically with a distinct posterodistal concavity, or the dilated distal portion incised; 2nd tarsomere slender, more or less sinuate, usually with a weak subbasal emargination. Middle and hind legs moderately slender, f usually with strong anterior and anteroventral bristles especially on middle $1/3$, long yellow hairs on ventral to posteroventral surfaces; t_2 more or less depressed, with bare ventral surface.

Wing moderately broad, its shape and venation quite normal, without any special ornamentations, discal cell with straight crossvein and right-angled or a little acute posterodistal corner; dark border or circular greyish marking occasionally appearing on discal crossvein.

Abdomen moderately to rather long, usually clothed with yellow hairs and bristles. Genitalia large, epandrium usually extremely large, oval, strongly produced posteriorly to posterodorsally; cercus lamellate, broad, long-ciliated marginally, loosely applied to pregenital venters.

♀. Much resembling male; legs plain, front tarsus slender and simple; palpus greyish brown pollinose.

The *impulvillatus*-group is best characterized by the reduction of pulvilli on all legs in both sexes. This character state is also found in the *fenestratus*-group, but in this group the empodia are also atrophied and at least four apical tarsomeres completely free from pollinosity and their setulae appressed. All of these character states are not found in the *impulvillatus*-group. The *impulvillatus*-group is also characterized by the four strong dorsocentrals. In this respect, this group resembles the *quadrisetosus*-group, but the latter is much different from the former in many structures, i.e. the subbasal arista, the simple legs with cylindrical front basitarsus and well developed pulvilli, the simple male genitalia with small, short-setose cerci. The *impulvillatus*-group now consists of the following five Nepalese

species, which are rather much differentiated from each other except *impulvillatus* and *fulvispinatus* having a very close sister species relationship with each other.

***Diostracus impulvillatus* sp. nov.**

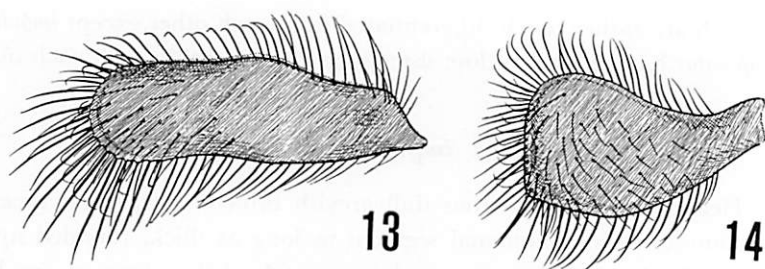
♂. Head: Vertex and frons dull greyish brown, other parts green and greyish pollinose. Third antennal segment as long as thick, rounded apically, with subapical arista. Palpus $2\times$ as long as wide, $1/2$ as long as eye height, widest beyond the middle, with rounded apical margin.

Mesoscutum subshining bronze, with a greenish tinge on dorsocentral stripes; subdorsal stripe a little darker, not sharply bordered; humeral callus and notopleural depression ash-grey pollinose; pleura light greyish pollinose. Chaetotaxy: One humeral without any fine setae; scutellum with an additional weaker outer pair (absent in only 1 paratype).

Front leg: Cx_1 with even inner surface, clothed with fine longish yellow hairs in front, bearing closely set 1–3 stiff black spine-like bristles at inner distal portion, and black anterodistal setae; f_1 with a posteroventral row of long brown bristles, an anteroventral row of shorter black ones from base to subapical portion, a double row of short black setae on basal $1/2$ of posterior surface; antero- and posterodorsal, antero- and posteroventral rows of bristles on t_1 short, the longest of each row as long as t_1 thickness or a little longer; basitarsus (Fig. 17) slender, on subapical portion, curved posteriorly and dorsally, dilated ventrally forming a weakly raised subapical ventral keel, bearing stiff longish bristles on posterior and ventral surfaces on basal $1/2$, and a few dorsodistal setae; 2nd tarsomere slender, $0.8\times$ as long as basitarsus, weakly constricted subbasally from posterior to ventral surfaces; claws and empodium $1/2$ as long as 5th tarsomere (ca. $130\ \mu$). Middle leg: F_2 thickest at basal $1/2$, then much tapered to apical $1/3$, weakly curved dorsally before the middle, bearing ca. 10 very strong black bristles on anterior to anteroventral surfaces for middle $1/2$, and a ventral row of longish fine yellow hairs. Hind leg: F_3 bearing 4–7 very strong spine-like, dark brown to black, anteroventral bristles on middle $1/2$, besides a few anterodorsal bristles near base and tip. Claws of middle and hind legs almost as in front leg.

Wing faintly greyish, darker along discal crossvein, M_1 and M_3 .

Abdomen subshining green, greyish pollinose at sides of terga; terga and 8th sternum yellow-haired except middle hind marginal setae of 1st tergum black. Genitalia large, epandrium ellipsoidal, strongly produced posteriorly; cercus (Fig. 13) blackish brown, greyish pollinose, $3\times$ as long as wide, parallel-sided, with rather rounded apex, ciliated marginally with long yellowish setae, of which outer marginal ones on apical portion ca. $1/2$ as long as those on inner or distal margin.



Figs. 13-14. Male left cerci.

13. *Diostracus impulsivillatus* sp. nov., 14. *Diostracus fulvispinatus* sp. nov.

Length: Body 5.3-6.0 mm; wing 6.4-6.7 mm.

♀. Head and thorax similar to those of male, palpi smaller, greyish brown pollinose; humeral callus without additional weak setulae as in male; legs all simple, cx_1 with black distal setae, but no inner spines; femora short-setose beneath, f_2 with 1-2 weak anteroventral bristles beyond the middle; f_3 with a few short anteroventral setae beyond the middle, the setae much shorter than f_3 thickness; t_2 not flattened, with 4-5 anterodorsal and 2 posterodorsal (at basal 1/2) strong bristles. Wing darker.

Length: Body 5.1-5.8 mm; wing 6.9-7.1 mm.

Holotype ♂, Thurukpa (2,600 m), 27°36'N, 87°36'E-Topke Gola (3,700 m), 27°38'N, 87°35'E, E. Nepal, 12. vi. 1972 (H. SHIMA).

Paratypes: 7♂♂1♀, same locality and data as holotype. (H. SHIMA, J. EMOTO) (KMNHIR 100043); 2♂♂, Topke Gola (3,700 m)-Thurukpa (2,600 m), 9. vii. 1972 (J. EMOTO, P. Norbu); 4♂♂, Papun (2,100 m), 15. vii. 1972 (H. SHIMA) (KMNHIR 100044-45); 5♂♂3♀♀, Topke Gola (3,700 m), 8. vii. 1972 (J. EMOTO) (KMNHIR 100047); 3♂♂1♀, Salpa La (2,880-3,050 m), 23-29. vii. 1981 (J. EMOTO) (KMNHIR 100046).

Remarks: *D. impulsivillatus* is easily distinguished from the known species of *Diostracus* by the combination of the presence of well-developed empodia, the reduced pulvilli, and four dorsocentral bristles. The closest ally of this species is the next *D. fulvispinatus*, and the differences between them are mentioned in description of the next species.

Diostracus fulvispinatus sp. nov.

Much resembling *D. impulsivillatus*, but differing as follows.

♂. Posterior bristles on proximal 1/2 of f_1 much weaker; anteroventral spine-like bristles of f_3 yellow in colour, humeral callus with 1-2 fine, short, yellow hairs in front of humeral bristle; cercus (Fig. 14) shorter and broader, a little longer than $1.5 \times$ width, evenly dilating to subapical portion, with inner marginal

ciliation much longer than apical and outer marginal ciliations; scutellum with more than 2 (3 or 4) accessory weak bristles in two out of three specimens.

Length: Body 5.7–6.0 mm; wing 5.9–6.0 mm.

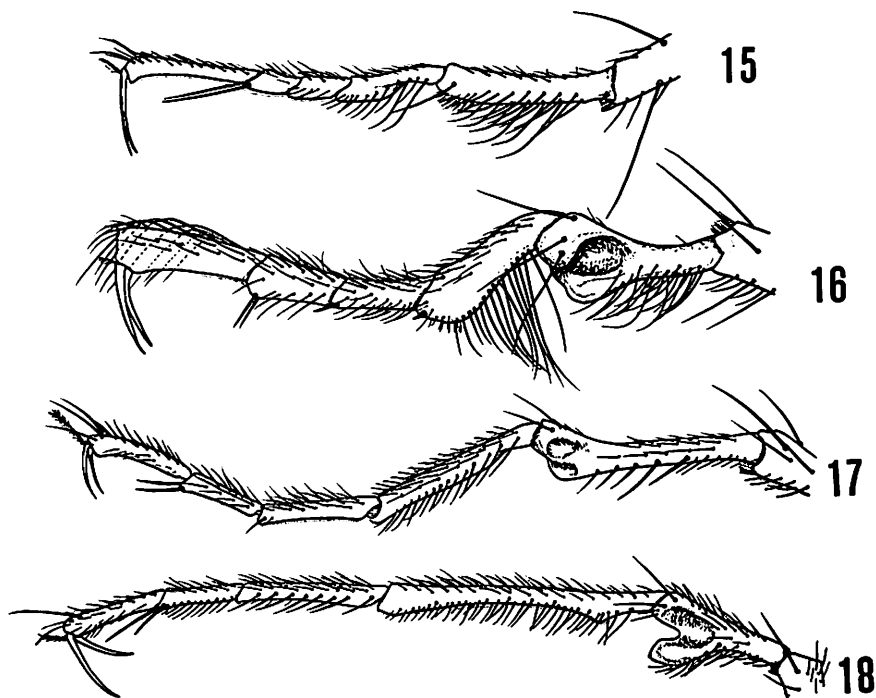
♀. Much resembling female of *impulvillatus*, but humeral callus with 1 weak yellow hairs as in male; f_2 with anteroventral row of 4 long yellow bristles as long as f_3 thickness or longer. It is uncertain that these features are reliable key characters to distinguish female of *fulvispinatus* from that of *impulvillatus*, because the available materials are too insufficient to detect constant differences.

Length: Body 5.5 mm; wing 6.6 mm.

Holotype ♂, Topke Gola (3,700 m), 27°38'N, 87°35'E, E. Nepal, 8. vii. 1972 (J. Emoto).

Paratypes: 1♀, same data as holotype; 2♂♂, Topke Gola (3,700 m)–Thurukpa (2,600 m), 9. vii. 1972 (J. Emoto) (KMNHIR 100048).

Remarks: As stated above *D. fulvispinatus* seems to be very closely related to *D. impulvillatus*, but they are sympatric with each other at Topke Gola.



Figs. 15–18. Male left front tarsi, posterior aspect.

15. *Diostracus longiunguis* sp. nov., 16. *Diostracus chaetodactylus* sp. nov., 17. *Diostracus impulvillatus* sp. nov., 18. *Diostracus angustipalpis* sp. nov.

Diostracus longiunguis sp. nov.

♂. Head blackish brown, densely greyish brown pollinose; face and clypeus green, white pollinose. Third antennal segment as long as thick, widest sub-basally, much tapered to pointed tip with apical arista; palpus $2\times$ as long as wide, widest at middle, much tapered to bluntly produced tip.

Thorax much sombre in colour, mesonotum dull dark brown, greenish reflections slightly perceptible down rows of dorsocentrals; notopleural depression and pleura dull grey; 2 equally strong humerals, a pair of scutellars present, and a pair of weak outer scutellars in a male paratype.

Front leg: Cx_1 strongly emarginate on inner surface, with a black spine at slightly projected inner distal portion; f_1 fairly stout, with double row of long bristles on ventral surface and similar row of shorter bristles on posterior surface; t_1 with each 2-3 long anterodorsal and posterodorsal bristles, each row of several ventral and posteroventral bristles, the posteroventral bristles $2\times$ as long as t_1 thickness; basitarsus (Fig. 15) slender, slightly curved dorsally beyond the middle, compressed and posteriorly curved subapically, with longish posteroventral ciliation on basal $2/3$, much fine yellowish one subapically; 2nd tarsomere constricted on basal $1/3$, and with a longish posteroventral ciliation; 4th tarsomere with a pair of ventrodistal bristles subequal to 5th tarsomere in length; claws extremely long ($310\ \mu$), more than $2/3$ length of 5th tarsomere; relative lengths of 5 tarsomeres 23:18:8:6:17. Middle leg: F_2 gradually thickened to basal $1/3$ on ventral surface, then much tapered to slender apical $1/3$, with several strong black bristles beneath before middle and long yellow hairs on posterior to posteroventral surfaces on basal $1/2$. Hind leg: F_3 with 5-6 strong anteroventral bristles, similar but weaker anterodorsal ciliation, and many fine longish yellow hairs beneath; middle claws a little longer than front claws, hind claws shorter than the front.

Wing clear with a greyish circular spot around anterior $2/3$ of discal crossvein, posterodistal corner of discal cell right-angled.

Abdomen subshining green, yellow-haired and bristled, more densely pollinose at sides of terga. Epandrium extremely large, 8th sternum silvery pollinose with yellow hairs; cercus oval, roughly $2\times$ as long as wide.

Length: Body 4.9-5.0 mm; wing 5.3-5.7 mm.

♀. Much resembling the male except the following ordinary sexual differences; palpus smaller and dark greyish brown pollinose; legs simple with strong bristles only on f_2 and f_3 . Pretarsal structure almost as in the male; wing with the circular marking.

Length: Body 4.1-4.8 mm; wing 5.0-5.8 mm.

Holotype ♂, Thudam (3,500 m), $27^{\circ}45'N$, $87^{\circ}32'E$, E. Nepal, 21. vi. 1972 (Malaise trap).

Paratypes: 1 ♂ 2 ♀♀, Thudam (3,500–3,800 m), 27. vi. 1972 (H. SHIMA, Y. NISHIDA) (KMNHIR 100049); 1 ♀, Topke Gola (3,700 m), 8. vii. 1972 (J. EMOTO) (KMNHIR 100050); 1 ♀, Salpa La (3,000–3,050 m), 29. vii. 1981 (J. EMOTO).

Remarks: *D. longiunguis* is readily distinguished from other members of the *impulvillatus*-group by the dark circular marking on discal crossvein and the extremely long claws in both sexes.

***Diostracus chaetodactylus* sp. nov.**

Resembling *D. longiunguis* but darker, head and thorax without green lustre.

♂. Head dull blackish grey; 3rd antennal segment $1.2\times$ as long as thick, thickest at the middle, rounded distally, with arista arising from upper distal margin; palpus rather narrow, $1.3\times$ as wide as thickness of 3rd antennal segment, $2\times$ as long as wide, $1/3$ as long as eye height, widest at middle, rather bluntly ended.

Mesonotum dull blackish brown, dorsocentral stripe blackish grey, widened anteriorly to include humeral callus, tapering posteriorly and ending at 3rd dorsocentral, dorsomedian stripe obscurely separated from subdorsal black stripes; lower humeral distinctly weaker than upper humeral, no additional scutellar setae.

Front leg: Cx_1 with inner margin straight, but produced into a triangular, tawny, inner distal protuberance adorned dorsally with several strong, curved, black spines; basitarsus (Fig. 16) much expanded ventrally beyond the middle into a triangular lobe (there basitarsus $0.5\times$ as thick as long), concave on posterior surface and weakly curved posteriorly at the middle, long-ciliated ventrally on basal $2/3$, and bearing 3 longish posterodistal to posterodorsal bristles; 2nd tarsomere dilated apically, shallowly emarginate on ventral surface, almost flattened on anterior surface, much long-bristled beneath towards base; ventro-distal bristles of 4th tarsomere shorter than $1/2$ length of 5th tarsomere; 5th tarsomere densely clothed anterodorsally with long, black, downcurved setae; claws $0.8\times$ as long as 5th tarsomere, 350μ long. Middle leg: F_2 thickened subbasally, gradually tapered apically, with 4–5 strong anteroventral bristles and pale posteroventral ciliation on basal $1/2$. Hind leg: F_3 with 4 long anteroventral bristles and a double ventral row of longish pale hairs; claws of middle and hind legs shorter than those of front leg.

Wing faintly greyish, with discal crossvein obscurely and evenly dark bordered.

Abdomen: Eighth sternum black setose; epandrium much smaller.

Length: Body 5.2 mm; wing 6.0 mm.

♀. Differing from the male as in *D. longiunguis*, and distinguished from

female of *longiunguis* by the darker colouration of head and thorax, the black anterodistal setae of front coxa, and the darker wing without a circular greyish patch on discal crossvein.

Length: Body 4.5–4.7 mm; wing 5.5 mm.

Holotype ♂, Thudam (3,500 m), 27°45'N, 87°32'E, E. Nepal, 29. vi. 1972, (Kyushu Univ. Sci. Exp., Malaise trap).

Paratypes: 1♀, Thudam (3,500 m), 21–30. vi. 1972 (Kyushu Univ. Sci. Exp., Malaise trap); 1♀, Thudam (3,500 m)–Tanga La (4,700 m), 5. vii. 1972 (H. SHIMA) (KMNHIR 100051).

Remarks: *D. chaetodactylus* most resembles *D. longiunguis*, but it is readily distinguished from the latter by the evenly broadly bordered discal crossvein which is not marked with a circular dark spot.

***Diostracus angustipalpis* sp. nov.**

Holotype ♂. Head more bluish than in *D. impulsivellatus*; 3rd antennal segment as long as thick, with subapical arista; palpus narrow, $0.45\times$ as long as eye height, $3.5\times$ as long as wide, evenly wide to apical $3/4$, then gently tapering to moderately produced apex.

Thorax subshining bronze, dorsocentral stripe narrow but green, fairly sharply bordered, humeral callus, notopleural depression and triangular area in front of 1st dorsocentral whitish pollinose, with cobalt blue reflections, supra-alar and prescutellar areas and scutellum greenish, subdorsal stripe darker bronze; pleura and coxae dull bluish grey; humeral callus with a tiny black hairs in front of humeral, scutellum with 2 much weak setae in addition to a pair of scutellars.

Front leg: Cx_1 long pale-haired anteriorly, with inner surface weakly emarginate and densely covered with minute yellowish pile beyond the middle, and bearing a strong spine-like process near distal margin; anterodistal setae of Cx_1 black; f_1 with a ventral row of 10 strong black bristles shorter apically; t_1 with 4 moderately long anterodorsal bristles, 2 shorter posterodorsal bristles and weaker posteroventral ciliation; basitarsus (Fig. 18) short, $1/2$ as long as 2nd tarsomere, much dilating apically beyond the middle, the enlarged portion concaved posteriorly, and characteristically deeply incised from distal margin, so that the basitarsus seemingly deeply bifurcate; basitarsus short ciliated antero-ventrally, and bearing 2–3 longer bristles on posteroventral and posterodistal portions; 2nd tarsomere slender, gently curving anteriorly on basal $1/2$, with ventral surface weakly raised at basal $1/4$, clothed above with scattering setulae, bearing a posterior row of stiff setae $1-1.5\times$ as long as 2nd tarsomere thickness; 3rd tarsomere also with a posterior ciliation longer than in 2nd tarsomere; claws $0.7\times$ as long as 5th tarsomere, 270μ long, empodium as long as 5th tarsomere thickness at middle. Middle leg: F_2 thickest at basal $1/4$, then rather strongly

and evenly tapered to tip, with 12–14 longish black bristles on basal $1/2$ – $2/3$ which are irregularly arranged in two rows on anterior to anteroventral surfaces of f_2 ; t_2 with each 3–4 strong anterodorsal and posterodorsal bristles. Hind leg: F_3 weakly curved ventrally for basal $1/3$, clothed with an anteroventral ciliation of fine brown setae longer towards tip, mixed with 1–2 strong bristles for apical $1/5$, and a posteroventral row of shorter yellow hairs which irregularly scatter on basal $1/2$; f_3 also bearing 1–2 short anterior setae on basal $1/3$, 3 strong anterodorsal bristles beyond the middle, and a strong preapical anterior bristle.

Wing similar to that of *D. impulsivillatus*, but discal cell a little longer, with its posterodistal corner acute (ca. 70°).

Abdomen rather elongate, subshining dark yellowish green, most of abdominal bristles and hairs black. Epandrium a little shorter than in *impulsivillatus*; cercus elongate, $4\times$ as long as wide, evenly tapering to pointed tip, yellow on basal $1/4$, blackish brown with greyish brown pollinosity on apical $3/4$, clothed with apically curled long yellow setae along inner margin, erect long black setae along outer margin, the longest seta a little shorter than cercus itself.

Length: Body 5.3 mm; wing 6.4 mm.

Paratype ♂. A male collected at Thurukpa–Topke Gola (70 km ENE of Salpa La, the type-locality) differs from the holotype in the following respects. As I have only each male specimen from two localities, I tentatively classified them in the same taxon.

Front 2nd tarsomere a little shorter, its anterior to anteroventral vestiture not arranged in a single row of erect setae, but consisting of longish suberect anterior setae which are uniserial on basal $1/2$ but irregularly biserial towards tip, and of almost biserial, more erect, shorter setae on apical $2/3$; anterior to anteroventral bristles of f_2 stronger; f_3 with anteroventral row of ciliation longer, mixed more black bristles, a posteroventral ciliation of yellow hairs longer and denser; outer marginal ciliation of cercus almost concolorous with inner ciliation.

Length: Body 6.5 mm; wing 6.9 mm.

♀. Resembling the male except the ordinary sexual differences in the shorter palpi, simple legs with much weaker setae, particularly on ventral surfaces of femora. The female of this species distinctly differing from those of other species of the *impulsivillatus*-group by the presence of white pollinose area between 1st dorsocentral and humeral callus and more bluish sheen of the body.

Length: Body 5.7–7.1 mm; wing 6.7–7.8 mm.

Holotype ♂, Salpa La (3,000–3,050 m), $27^\circ 27'N$, $86^\circ 55'E$, E. Nepal, 29. vii. 1981 (J. EMOTO).

Paratypes: 1♂1♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (H. SHIMA, J. EMOTO) (KMNHIR 100052); 1♀, Thudam (3,500 m), 1–4. vii. 1972 (Kyushu Univ. Sci. Exp., Malaise trap); 2♀♀, Salpa La (2,800–

3,050 m), 23–29. vii. 1981 (J. EMOTO, including light trap captures) (KMNH IR 100053).

Remarks: *D. angustipalpis* is somewhat isolated from other members of the *impulvillatus*-group, and differs from them in the much narrowed palpus, the bifurcate appearance of basitarsus and the weakly bristled femora in the male, and in the presence of the white pollinose markings in front of the anteriormost dorsocentrals in both sexes.

The *quadrisetosus*-group

♂. Clypeus projecting forwards; vertical bristle minute, rarely absent, ocellars strong; postocular ciliation usually yellow on lower 1/2 of occiput, rarely almost entirely black, lower occipital hairs yellow, moderate in density and length. Antenna short, 3rd segment triangular, a little longer than thick, with subbasal to dorsal arista. Palpus either small and tightly applied on rostrum or enlarged and projecting forwards, yellow to yellowish white, with silky or golden sheen. Rostrum rather small.

Mesonotum subshining green to bronze, darker laterally, with a pair of coppery to bronze subdorsal stripes; pleura dark greyish brown pollinose. Chaetotaxy: Four fairly strong dorsocentrals, 1 humeral, 1 posthumeral, 2 notopleurals, 1 supra-alar, 1 postalar, 2 scutellars all strong, scutellum often with a pair of minute setulae lateral to scutellars; proepisternum with one to several yellow hairs on lower portion.

Legs slender and mostly simple in structure, yellow, bronze or blackish in ground colour, pollinose as their pleura. Front leg: Cx_1 simple and short-setose anteriorly or emarginate on anterior surface in various degrees and forming a setiferous subapical tubercle; f_1 simple, rarely much swollen on basal 1/2, bearing erect bristles on ventral surface towards base, and often with posteroproximal bristles; t_1 simple, tarsus slender, basitarsus long and slender, rarely weakly sinuate, usually with a row of short, weak anteroventral spinules. Middle leg: Cx_2 simple, occasionally with dense curved setae; f_2 sometimes with a few strong bristles beneath on basal 1/2; t_2 and tarsus simple, the latter rarely with subpennate fringe. Hind leg: Simple and slender, f_3 short-setose, with an anterior preapical bristle. Tarsi of all legs pollinose and clothed with subdecumbent setulae; empodium and pulvilli ordinary in size.

Wing simple in shape and venation; discal crossvein straight or weakly arched outwards; posterodistal corner of discal cell right-angled or obtuse. Halter yellow.

Abdomen moderately slender, without prominent modification in structure and vestiture; genitalia small, cercus short, simple and sparsely clothed with short setulae.

♀. Much resembling male; legs plain; anteroventral setae of front

basitarsus not differentiated.

The *quadrisetosus*-group is characterized by 4 pairs of dorsocentral bristles. This character state is also found in the *impulvillatus*-group, from which the *quadrisetosus*-group is easily distinguished by the normally well-developed pulvilli on all the legs. The group includes the small-sized, slender-legged species having the simple wings, legs and male pregenital and genital segments. In these respects, this group resembles Japanese *D. inornatus* and its allies, but these Japanese species have 6 pairs of dorsocentral bristles and sutural bristles. The *quadrisetosus*-group is known from the following six new species and *D. aurifer* TAKAGI, all from Nepal.

Diostracus auripalpis sp. nov.

♂. Head dull blackish brown, clypeus subshining green, occiput dull greenish brown; verticals minute, lower occipital setae yellow, short and scanty. Antenna: First segment short, 3rd segment $1.0-1.2\times$ as long as thick, pointed apically; arita arising from dorsal to subbasal portion of 3rd segment. Palpus $0.27\times$ as long as eye height, $1.7\times$ as long as wide, oval, and glittering golden.

Mesoscutum subshining green, area between dorsocentral rows, sides of notum cupreous, subdorsal stripes dark cupreous or bronze, indistinctly bordered; humeral callus and notopleural depression dark grey pollinose; pleura and coxae greyish pollinose, with weak greenish reflections. Dorsocentrals fairly long, humeral with a minute setula in front, scutellum also with a pair of minute outer setulae; proepisternum with 1-3 fine short yellow hairs on lower portion.

Legs slender, rather simple and blackish with greenish or bronze tinge, apices of coxae, trochanters tawny. Front leg: Cx_1 short pale-setose in front, moderately emarginate on inner surface, weakly swollen on anterior subapical portion, which is armed with 2-3 short stiff blackish spines, and bearing several long yellow hairs on anterior surface towards base, several long yellow setae at inner distal portion and a row of shorter, yellow anterodistal setae; f_1 (Fig. 21) with a ventral row of ca. 8, proximally suberect, curved, long, yellow setae, of which the longest near the middle is as long as f_1 thickness; t_1 short bristled above, beneath with suberect fine setulae and bearing a strong posteroventral bristle at apical $1/3$; tarsus slender, basitarsus $0.68-0.69\times$ as long as t_1 , slender, bearing a ventral row of short stiff spinules which are $1/2$ as long as basitarsus thickness; 2nd tarsomere $0.6\times$ as long as basitarsus, short spinulose beneath. Middle leg: Cx_2 (Fig. 24) clothed anterodistally with rather dense curved yellow hairs; f_2 slightly flattened, bearing 2-4 longish tawny (in specimen from Chiaksila) or black (in specimen from Navagaon) ventral bristles on basal $1/3$; middle tarsus slender and simple, only short-haired. Hind leg: F_3 almost bare beneath.

Wing faintly greyish, discal cell evenly and gently dilating apically as posterior

vein of discal cell is almost straight and evenly diverging from anterior margin; discal crossvein weakly arched outwards, posterodistal corner of discal cell obtuse; M_3 $0.4\times$ as long as discal crossvein.

Abdominal terga subshining bronze to coppery, sparsely clothed with short brown to yellow setae; 1st abdominal tergum without outstanding black marginal bristles, posterior portion of 4th sternum bearing a short, weak ventromedian keel; genitalia moderately large, cercus oval, drooping, clothed marginally with short pale hairs.

Length: Body 3.8–4.2 mm; wing 5.6–5.7 mm.

♀. Much resembling the male and differing as follows.

Palpus greyish brown; cx_1 simple, with its anterior hairs shorter, distal setae and bristles yellow but thinner and shorter (outermost anterodistal setae may be brown); f_1 beneath short-haired; f_2 with 1–2 fine, shorter ventral setae at basal $1/3$. F_1 gently and evenly tapering from basal $1/4$ to apex; discal cell gently and evenly widening to apex as in ♂.

Length: Body 4.8–5.1 mm; wing 5.9–6.1 mm.

Holotype ♂, Chiaksila Kharka (2,730 m), $27^{\circ}26'N$, $86^{\circ}57'E$, E. Nepal, 16. vii. 1981 (J. EMOTO).

Paratypes: 2♀, same data as holotype (1♀ is light trap capture); 1♂1♀, Salpa La (2,750–2,850 m), 24. vii. 1981 (J. EMOTO) (KMNHIR 100054–55); 1♂, Navagaon (2,050 m)–Moyam (1,850 m), 30. vi. 1981 (J. EMOTO).

Remarks: *D. auripalpis*, together with next species, is distinguished from other members of the *quadrisetosus*-group (including *D. aurifer* TAKAGI, only the known species of the group) by the subapical ornamentation of front coxa.

Diostracus femoratus sp. nov.

♂. Resembling *D. auripalpis* except for the following respects.

Larger in size; inner subapical swelling of cx_1 more strongly developed, and adorned with closely set numerous black spinules discally; f_1 (Fig. 22) extraordinarily swollen ventrally on basal $1/2$, then abruptly tapered beyond the middle, the thickest portion $2.2\times$ as thick as apical $1/2$ which keeps almost the same thickness throughout; the swollen portion armed anteroventrally with a short row of 6–7 long, tawny, spine-like bristles for its middle $1/3$, posteroventrally with scattered stiff black setae, and covered ventrally with silvery velvety polinosity; t_1 with the posteroventral bristle at apical $1/3$ much shorter; front basitarsus 0.65 – $0.68\times$ as long as t_1 , weakly bisinuate on basal $1/2$ (first sinuated posteriorly at basal $1/3$, then anteriorly at the middle), with an anteroventral row of short spines from base to subapical portion, the spines on basal $1/2$ thicker, flattened and curved; front 2nd tarsomere 0.58 – $0.63\times$ as long as basitarsus; f_2 with weaker ventral setae; posteroventral bristles of t_2 more in number, especially

towards tip; middle basitarsus with ca. 7 longish suberect posterior bristles; middle 2nd to 4th tarsomeres with short subpenne fringe on both sides; as the posterior marginal vein of discal cell is bisinuate on apical portion, discal cell rather strongly widening towards subapical portion, then keeping the same width to apex (distance keeping the same width almost as long as discal crossvein), and the posterodistal corner of discal cell rounded.

Length: Body 4.8–5.6 mm; wing 6.6–6.9 mm.

♀. Extremely similar to *D. auripalpis* female, but differing as follows.

Front femur not gently and evenly tapering towards tip, but keeping almost the same thickness to basal 1/3, then much tapered to apical 1/3 which are evenly slender, $0.58\text{--}0.67\times$ as thick as basal 1/3; f_2 beneath without outstanding setae at basal 1/3; discal cell keeping the same width for some distance on apical portion.

Length: Body 4.6–5.1 mm; wing 6.5–6.7 mm.

Holotype ♂, Papun (2,100 m), $27^{\circ}32'N$, $87^{\circ}38'E$, E. Nepal, 15. vii. 1972 (H. SHIMA).

Paratypes: 1♀, same data as holotype; 1♂1♀, Tank (1,900 m)–Penmaten (2,600 m), 29. vi. 1972 (H. MAKIHARA) (KMNHIR 100056); 1♂1♀, Thurukpa (2,700 m)–Papun (2,100 m), 10. vii. 1972 (J. EMOTO, P. NORBU) (KMNHIR 100057).

Remarks: *D. femoratus* most resembles *D. auripalpis*, but it is distinguished from the latter by the basally swollen front femur which, in the male, is armed with strong spines or setae, the evenly broad apical portion of the discal cell, etc. The two species were not collected together.

Diostracus simplicipes sp. nov.

♂. Vertex and frons dull blackish brown, face and clypeus dark green, the latter subshining; occiput greyish brown, with green reflections; vertical bristle absent; lower occipital hairs yellow to yellowish brown, scanty but longish. Antenna: First segment short, often with 1–2 minute dorsal setulae; 3rd segment $0.9\text{--}1.0\times$ as long as thick, triangular, with subbasal arista. Palpus small, tightly applied on rostrum, $0.2\text{--}0.24\times$ as long as eye height, $1.5\text{--}2.0\times$ as long as wide, yellow with dull golden sheen, clothed with several black setulae.

Mesoscutum subshining brownish green to bronze, with a broad band between rows of dorsocentrals and sublateral portion bronze to coppery; humeral callus greyish brown pollinose; pleura greyish pollinose, with slight greenish reflections. Chaetotaxy: Bristles all fairly long; humeral callus with 1–2 minute fine hairs below humeral bristle; scutellum with a pair of similar fine hairs lateral to scutellars; proepisternum with 2–5 fine yellow hairs on lower portion.

Legs slender, simple, yellow to yellowish brown, cx_2 , cx_3 , apical tarsomeres of front tarsus, and middle and hind tarsi darkened. Cx_1 clothed anteriorly with

longish fine yellow hairs longer basally, and anterodistally with yellow setae; f_1 beneath with several longish erect yellow hairs, posterior setulae of f_1 slightly stronger proximally, but not bristle-like; t_1 much short-bristled; front tarsus (Fig. 26) slender and unmodified, $0.64-0.68 \times$ as long as t_1 , with an anteroventral row of setulae which are subdecumbent, rather fine, sparsely set, and not much differentiated from other setulae on basitarsus; 2nd tarsomere $0.48-0.54 \times$ as long as basitarsus. Middle and hind legs slender and simple; f_2 beneath with several fine, short, yellow hairs on basal $1/2$.

Wing faintly greyish, its venation and shape normal, discal cell right-angled to a little produced posterodistally; M_3 $0.5-0.8 \times$ as long as discal crossvein.

Abdominal terga subshining greyish brown, clothed with short black setulae, and mixed with yellowish ones at sides; 1st tergum without outstanding black marginal bristles; genitalia rather small, with lobate, short black-ciliated cerci.

Length: Body 2.6–3.2 mm; wing 3.9–4.6 mm.

♀. Much resembling the male; palpus light greyish brown; f_1 without longish ventral setae; front basitarsus finer-setose.

Length: Body 3.4 mm; wing 4.7–5.0 mm.

Holotype ♂, Chiaksila Kharka (2,800 m), $27^{\circ}26'N$, $86^{\circ}57'E$, E. Nepal, 20. vii. 1981 (J. EMOTO).

Paratypes: 1 ♂, same data as holotype (KMNHIR 100058); 1 ♂ 3 ♀♀, same locality (2,730 m), 16. vii. 1981 (J. EMOTO, including light trap captures) (KMNHIR 100059); 1 ♂, Salpa La (2,900 m), 24. vii. 1981 (J. EMOTO); 1 ♂, Thudam (3,500 m), 24. vii. 1972 (J. EMOTO); 1 ♂, Thurukpa (2,600 m)–Papun (2,100 m), 10. vii. 1972 (P. NORBU).

Remarks: *D. simplicipes* is easily distinguished by the absence of vertical bristles from all the known species of the genus except for the *fenestratus*-group, which is quite different from *simplicipes* by many characters including venation, the modified front tarsus, etc. It is also distinguished from the other members of the *quadrisetosus*-group by the yellow legs without any special ornamentations.

Diostracus parvus sp. nov.

♂. Resembling *D. simplicipes* in coloration of legs, but leg chaetotaxy more specialized.

Vertex and frons deep blackish green, face and clypeus dark green, the latter shining; occiput greyish brown pollinose; verticals minute; lower occipital setae yellow and scanty. Antenna: First segment with a minute hair above; 3rd segment lost in the holotype, only the available specimen. Palpus $0.29 \times$ as long as eye height, $2.4 \times$ as long as wide, tightly applied on rostrum, light yellow with weak golden sheen, clothed with several black setae.

Mesoscutum subshining dark green, darker sublaterally, marked with a

pair of bronze subdorsal stripes fairly distinct, humeral and postalar calli light greyish brown pollinose; pleura light greyish brown pollinose with slight greenish reflections. Humeral callus with a minute hair below humeral bristle; scutellum with a pair of minute hairs lateral to scutellars; proepisternum with 2-4 fine yellow hairs on lower portion.

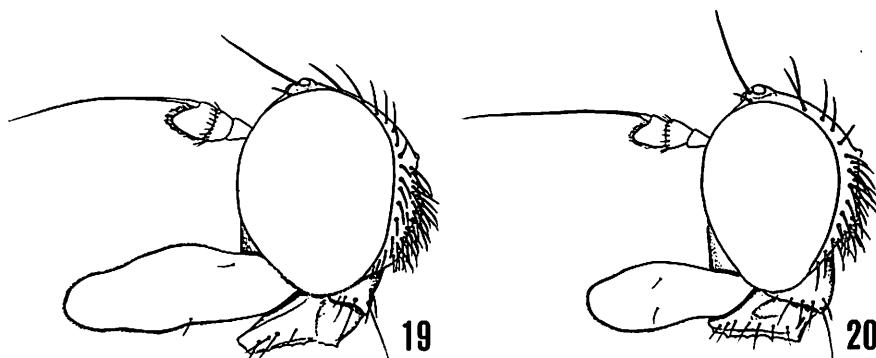
Legs slender, yellow, apical tarsomeres and cx_2 darkened. Front leg: Cx_1 sparsely clothed with short yellow hairs in front, anterodistal bristles of cx_1 yellow to brown, the innermost 3 blackish and converging apically to each other; f_1 beneath with several curved yellow setae and bearing 1-2 stiff black bristles posteroproximally; basitarsus (Fig. 27) $0.65\times$ as long as t_1 , slender and very weakly sinuous, with an anteroventral row of closely set, suberect, stiff setulae throughout its length, the setulae quite distinct from other subdecumbent finer setulae on the basitarsus; 2nd tarsomere simple, $0.5\times$ as long as basitarsus. Middle and hind legs as in *D. simplicipes*, but f_2 with no fine hairs beneath.

Wing with M_3 $1/2$ as long as discal crossvein. First abdominal tergum with 5 long black marginal bristles; otherwise similar to that of *simplicipes*.

Length: Body 3.1 mm; wing 4.8 mm.

Holotype ♂, Papun (2,100 m), $27^{\circ}32'N$, $87^{\circ}38'E$ - Thurukpa (2,600 m), $27^{\circ}36'N$, $87^{\circ}36'E$, E. Nepal, 11. vi. 1972 (J. Emoto).

Remarks: Although *D. parvus* resembles *D. simplicipes* in colouration of legs, the two are much differentiated in the chaetotaxy of legs and abdomen as stated above.



Figs. 19-20. Male heads, left lateral aspect.

19. *Diostracus magnipalpis* sp. nov., 20. *Diostracus aurifer* Takagi.

Diostracus magnipalpis sp. nov.

♂. Head (Fig. 19): Vertex and frons dull blackish brown, with a slight coppery tinge, face dark greyish brown, but dull blackish along eye; clypeus and

occiput fairly densely greyish brown pollinose, the former with weak green reflections; the narrowest part of face $0.24-0.27$ ($\bar{x}=0.26$, $N=12$) \times as wide as head; vertical bristles weak to moderately strong; 1-3 (rarely 4) upper postocular setae black, lower ones yellowish brown to yellow; lower occipital setae short, sparse and yellow. Antenna: First segment short, usually with 1-3 minute setulae above; 3rd segment triangular, $1.0-1.1 \times$ as long as thick, pointed distally, with subbasal arista. Palpus extraordinarily enlarged, extending forwards beyond the frontal margin to the distance equal to head length, $1.1-1.2 \times$ as long as eye height, $2.8-3.1 \times$ as long as wide, long oval and yellowish white with silky lustre, its outer (dorsal in usual *Diostracus* species) surface sparsely clothed with pale short setae.

Mesoscutum individually varying from subshining green with bronze subdorsal stripes and sublateral portions, to subshining bronze with indistinct darker subdorsal stripes; humeral callus and notopleural depression light grey pollinose; pleura and cx rather densely light brownish grey pollinose, meso-anepisternum with slight coppery reflections. Thoracic bristles fairly strong, a tiny setula usually present each below humeral bristle and lateral to scutellar bristle; propisternum with 1 strong yellow seta and several shorter setulae on lower portion.

Legs blackish, femora with bronze reflections; apices of cx, trochanters, bases of f and knees yellowish. Front leg: Cx₁ sparsely clothed with short fine yellow hairs in front, and bearing yellow to yellowish brown anterodistal bristles; f₁ beneath with ca. 8 rather stiff, curved, erect, tawny setae on basal 2/3 (the longest towards base 1/2 as long as f₁ thickness), posteroventrally with a short row of 3-4 proximally suberect, tiny, black setae before the middle, and posteroproximally with 1-2 stiff bristles which are followed distally by scattered setulae; t₁ ventrally with 1 (rarely 2) strong posteroventral bristle ($1.5-2.0 \times$ as long as t₁ thickness) almost at the middle; basitarsus slender and straight, $0.73-0.76 \times$ as long as t₁, with a complete anteroventral row of short, stiff, densely set spinules; 2nd tarsomere simple, $0.47-0.53 \times$ as long as basitarsus. Middle leg: F₂ with the following spine-like bristles, 3-6 short black to tawny ones besides one pre-apical on apical 2/3 of anterior surface, 0-3 short tawny ones around basal 1/3 of anteroventral surface, and 1-3 (mostly 2) longish tawny ones at basal 1/3 of ventral surface. F₃ beneath sparsely with short, fine, pale hairs.

Wings faintly greyish, venation and wing shape normal, R₄₊₅ thinner than R₂₊₃ at the middle level of free section of M₁; M₃ $0.7-0.9 \times$ as long as discal crossvein; posterodistal corner of discal cell not or slightly produced.

Abdominal terga subshining greenish brown to bronze, short black-setose, but with pale setae at sides; 1st tergum with long black marginal setae. Genitalia almost as in *D. aurifer* TAKAGI. Fourth sternum more truncate than in *aurifer*.

Length: Body 3.2-3.8 mm; wing 4.7-5.1 mm.

♀. Much resembling male, and differing in the following respects. Palpus

small, $0.4\times$ as long as eye height, dark brown pollinose and short black setose; ventral surfaces of f_1 and f_2 without outstanding setae or bristles. A ratio of the narrowest width of face to eye height 0.36–0.42; total number of blackish postocular bristles (excluding a pair of postverticals) 3–7 ($\bar{x}=5.4$, $\sigma_n=1.03$, $N=34$, 7 is 12%).

Length: Body 2.9–3.8 mm; wing 4.6–5.6 mm.

Holotype ♂, Thudam (3,500–3,800 m), 27°45'N, 87°32'E, E. Nepal, 24. vi. 1972 (H. SHIMA).

Paratypes: 7♂♂6♀♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (J. EMOTO) (KMNHIR 10060–62) (KMNHIR 100077–78); 23♂♂7♀♀, Thudam (3,500–3,800 m), 24–27. vi. 1972 (H. SHIMA, Y. NISHIDA, J. EMOTO) (KMNHIR 100063–67) (KMNHIR 100084–85); 17♂♂16♀♀, NE of Thudam (4,000 m), 25–30. vi. 1972 (H. SHIMA, Y. NISHIDA, J. EMOTO) (KMNHIR 100068–70) (KMNHIR 100079–83); 5♂♂6♀♀, Penmaten (2,600 m)–Topke Gola (3,700 m), 30. vi. 1972 (H. MAKIHARA) (KMNHIR 100071–72) (KMNHIR 100086–88); 4♂♂, Thudam (3,500 m)–Tanga La (4,700 m), 5. vii. 1972 (H. SHIMA) (KMNHIR 100073–74); 1♂3♀♀, Topke Gola (3,700 m), 8. vii. 1972 (J. EMOTO); 4♂♂4♀♀, Topke Gola (3,700 m)–Thurukpa (2,600 m), 9. vii. 1972 (J. EMOTO) (KMNHIR 100075–76) (KMNHIR 100089–90).

Remarks: *D. magnipalpis* much resembles *D. aurifer* in the enlarged palpi, but can be distinguished from the latter by the slender R_{4+5} and the extraordinarily enlarged palpi in the male, but can hardly be distinguished in the female by the narrower face. *D. magnipalpis* and *D. aurifer* are allopatric in distribution.

Diostracus aurifer TAKAGI

Diostracus aurifer TAKAGI, 1972, J. nat. Hist., 6: 521–252, (type-locality: Nepal, 27°58'N, 85°00'E, 11, 100 feet).

Specimens collected at Salpa La–Chiaksila area may all be assignable to *D. aurifer* TAKAGI described from the high altitudes north of Kathmandu. These specimens much resemble *D. magnipalpis* but are distinguished from the latter in the following respects.

♂. Smaller. Head (Fig. 20): Narrowest width of face 0.21–0.22 ($\bar{x}=0.216$, $N=8$) as wide as head; clypeus shining green, with sparse greyish pollinosity; upper 4–7 postocular bristles black. Palpus shorter, $0.77\text{--}0.89\times$ as long as eye height, $2.2\text{--}2.5\times$ as long as wide. Legs rather shorter setose, cx_1 with anterodistal bristles usually including many brownish ones; f_1 with postero-proximal bristles sometimes inconspicuous, a short row of proximally suberect

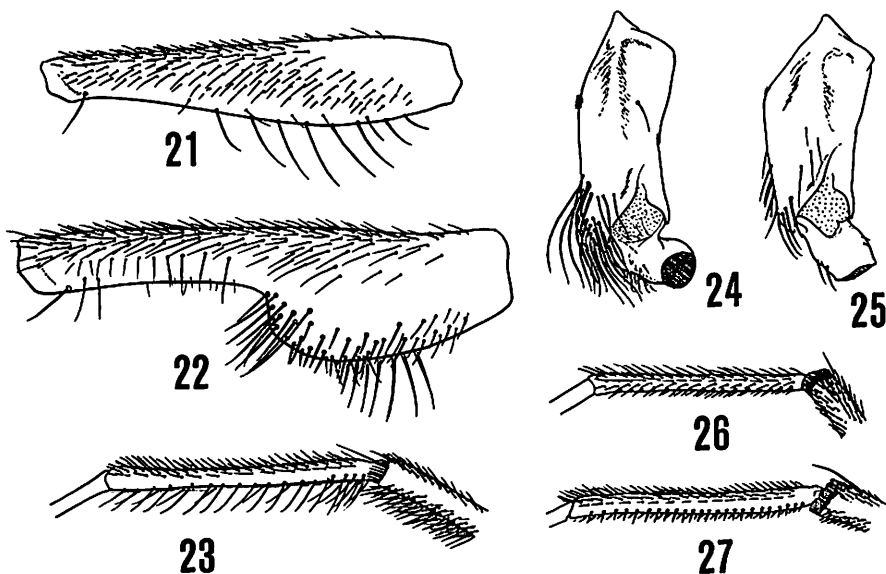
posteroventral setae almost untraceable; posteroventral bristles of t_1 often more distal; basitarsus shorter, $0.67-0.72 \times$ as long as t_1 ; 2nd tarsomere $0.45-0.52 \times$ as long as basitarsus; f_2 with 1-2 anterior, 0-1 anteroventral and 1 (rarely 2) ventral bristles, all shorter than in *magnipalpis*. R_{4+5} throughout its length distinctly thicker than R_{2+3} or M_1 .

Length: Body 2.8-3.4 mm; wing 4.3-4.9 mm.

♀. Much resembling female of *D. magnipalpis*, but differing in the following respects. Face wider, a ratio of the narrowest width of face to eye height 0.31-0.36; total number of blackish postocular bristles (excluding a pair of postverticals) 7-14 ($\bar{x}=10.0$, $\sigma_n=1.8$, $N=39$; 7 is 10%).

Length: Body 2.9-4.1 mm; wing 4.4-5.6 mm.

Specimens examined: 14♂♂3♀♀, Chiaksila Kharka (2,800 m), 13. vii. 1981 (J. EMOTO); 1♀, Chiaksila Kharka (2,800 m), 20. vii. 1981 (J. EMOTO); 2♂♂2♀♀, Salpa La (3,000-3,280 m), 21. vii. 1981 (J. EMOTO); 6♂♂5♀♀, Salpa La (3,000-2,800 m), 23. vii. 1981 (J. EMOTO); 3♂♂2♀♀, Salpa La (2,900 m), 24. vii. 1981 (J. EMOTO); 1♂, Salpa La (2,900 m), 25. vii. 1981 (J. EMOTO); 6♂♂1♀, Salpa La (2,900 m), 27. vii. 1981 (J. EMOTO); 3♂♂3♀♀, Salpa La (2,980 m), 28. vii. 1981 (J. EMOTO); 24♂♂16♀♀, Salpa La (2,800-



Figs. 21-22. Male left front femora, posterior aspect; figs. 23, 26-27. Male right front metatarsi, anterior aspect; figs. 24-25. Female left middle coxae and trochanters.

21 and 24. *Diostracus auripalpis* sp. nov., 22. *Diostracus femoratus* sp. nov., 23. *Diostracus nigripilosus* sp. nov., 25. *Diostracus makiharai* sp. nov., 26. *Diostracus simplicipes* sp. nov., 27. *Diostracus parvus* sp. nov.

3,050 m), 29. vii. 1981 (J. EMOTO); 1♂, Jumbesi K. (3,450 m), 11. viii. 1981 (J. EMOTO); 1♀, Jumbesi K. (3,400–3,500 m), 12. viii. 1981 (J. EMOTO); 1♂2♀, Tragdobuk (2,950–3,180 m), 15. viii. 1981 (J. EMOTO).

Diostracus makiharai sp. nov.

In many respects much resembling *D. magnipalpis*, but larger and differing as follows.

♂ (Fig. 25). Face with a narrow greyish vertical median stripe on dull blackish ground when viewed anterodorsally. The narrowest portion of face $0.1\text{--}0.13\times$ as wide as head; clypeus shining coppery; vertical bristles very weak, upper 4 postocular bristles black; lower occipital hairs mixing a few long ones; palpus shorter, $0.56\times$ as long as eye height, $2\times$ as long as wide, silky yellow, with slight bluish silvery reflections, sparsely clothed with fine brownish setae. Cx_1 in front with ca. 10 short erect black setulae subapically, and anterodistal bristles brown to black; chaetotaxy of f_1 similar to that of *magnipalpis*, but stronger, particularly in the short posteroventral ciliation; t_1 with ventral setulae suberect; basitarsus longer, $0.83\text{--}0.87\times$ as long as t_1 , with anteroventral spinules stronger, but less densely set; front 2nd tarsomere $0.47\text{--}0.48\times$ as long as basitarsus; number of anterior, anteroventral and ventral bristles of f_2 in ranges of those of *magnipalpis*, but ventral bristles mostly black; apical setae of Cx_2 almost as in *magnipalpis*, not so prominent as in *aurifer* or *femoratus*. Wing a little darker, discal crossvein more strongly arched posteriorly; M_3 $0.5\text{--}0.7\times$ as long as discal crossvein. Epandrium more strongly produced posterodorsally.

Length: Body 4.1–4.3 mm; wing 5.4–5.8 mm.

♀. Much resembling male, except the following respects. Palpus smaller, $0.37\times$ as long as height of eye, dark brown pollinose, and short black setose; f_1 without strong bristles and setae beneath; front tarsus simple and short-setose; f_2 only with 1–2 brown or black bristles beneath on basal $1/3$.

Length: Body 3.9–4.2 mm; wing 6.1 mm.

Holotype ♂, Tank (1,900 m), $27^\circ33'N$, $87^\circ36'E$ – Penmaten (2,600 m), $27^\circ36'N$, $87^\circ36'E$, E. Nepal, 29. vi. 1972 (H. MAKIHARA).

Paratypes: 1♂1♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), E. Nepal, 12. vi. 1972 (J. EMOTO) (KMNHIR 100091) (KMNHIR 100092); 1♀, same data as holotype.

Remarks: *D. makiharai* somewhat resembles *D. aurifer* and *D. magnipalpis*, but it is easily distinguished by the presence of a narrow vertical greyish stripe on the face in both sexes.

Diostracus quadrisetosus sp. nov.

♂. Head: Vertex and frons dull blackish with a slight greenish tinge, face very dark green to dull blackish brown with a slight greenish tinge, clypeus shining dark green, sparsely greyish pollinose; the narrowest portion of face $0.17-0.22 \times$ as wide as head ($\bar{x}=0.20$, $N=10$); vertical bristles weak, upper 4-6 postocular bristles black, lower occipital yellow hairs short and rather thick. Antenna: First segment occasionally with 1-2 minute dorsal setulae; 3rd segment short, triangular, $1.0-1.4 \times$ as long as thick, with subbasal arista. Palpus rather short and oval, loosely applied on rostrum, often projecting forwards, $0.36-0.42 \times$ as long as eye height, $1.8-2.0 \times$ as long as wide, orange-yellow with silky lustre, sparsely with yellowish setulae, and occasionally with dark ones towards tip.

Thoracic colouration and bristles almost as in *D. magnipalpis* but subdorsal stripes more prominent than in *magnipalpis* or *aurifer*. Colouration of legs almost as in *magnipalpis*. Front leg: Quite resembling that of *aurifer*, i.e., bristles weaker than in *magnipalpis*, cx_1 with anteroproximal bristles mostly dark; f_1 with weak ventral setae, anteroventral row of setae seen in *magnipalpis* absent, but a posteroproximal bristle generally stronger than in *aurifer*; t_1 occasionally with 2 posterovenral bristles; basitarsus $0.64-0.78 \times$ as long as t_1 , its anteroventral spinules weaker than in *aurifer*; 2nd tarsomere $0.48-0.52 \times$ as long as basitarsus. Middle leg: Cx_2 not long-ciliated anterodistally; f_2 with 2 (rarely 3) anterior bristles near middle, occasionally with 1 anteroventral and 1 (rarely 2) ventral bristles towards base, the latter usually brownish. Wing and abdomen quite as in *aurifer*, R_{4+5} distinctly thicker than R_{2+3} or M_1 .

Length: Body 2.7-3.4 mm; wing 4.5-5.0 mm.

♀. In every respect quite similar to females of *D. aurifer*, no reliable differences are detected. Associated with the male only based on the localities.

Length: Body 2.7-3.9 mm; wing 4.6-5.2 mm.

Holotype ♂, N E of Thudam (4,000 m), $27^{\circ}47'N$, $87^{\circ}36'E$, E. Nepal, 25. vi. 1972 (H. SHIMA).

Paratypes: 6♂♂5♀♀, Thurukpa (2,600 m)-Topke Gola (3,700 m), 12. vi. 1972 (J. EMOTO, H. SHIMA) (KMNHIR 100093-94) (KMNHIR 100095-96); 1♂, Thudam (3,500-3,800 m), 24. vi. 1972 (J. EMOTO); 1♂3♀♀, NE of Thudam (4,000 m), 25. vi. 1972 (H. SHIMA) (KMNHIR 100097-99); 1♂, Thudam (3,500-3,800 m), 27. vi. 1972 (Y. NISHIDA); 3♂♂, NE of Thudam (4,000 m), 28. vi. 1972 (J. EMOTO) (KMNHIR 100100); 5♀♀, NE of Thudam (4,000 m), 28. vi. 1972 (H. SHIMA) (KMNHIR 100101); 2♂♂6♀♀, NE of Thudam (4,000 m), 30. vi. 1972 (H. SHIMA) (KMNHIR 100102-103); 3♂♂2♀♀, NE of Thudam (4,000 m), 30. vi. 1972 (J. EMOTO); 1♂2♀♀, Penmaten (2,600 m)-Topke Gola (3,700 m), 30. vi. 1972 (H. MAKIHARA); 1♀, Thudam (3,500 m), 1-4. vii. 1972 (Malise trap); 1♂, Topke Gola (3,700 m)-Thurukpa (2,600 m),

9. vii. 1972 (J. EMOTO).

Remarks: *D. quadrisetosus* closely resembles *D. aurifer* in every respect except for the enlarged male palpi, and the females of two species at present cannot be separated.

The *nigripilosus*-group

This group is represented by the following new species, *D. nigripilosus*.

Diostracus nigripilosus sp. nov.

♂. Head dull blackish brown, occiput subshining greenish brown, and greyish pollinose; clypeus dull grey; verticals fairly strong, $1/2$ – $2/3$ as long as ocellars, but as long as postverticals; postocular ciliation and rather scanty lower occipital setae all black. Antenna: First segment setose above; 3rd 1.2 – $1.3 \times$ as long as thick, triangular, pointed apically, with subbasal arista arising slightly before the middle. Palpus small, $1/4$ as long as eye height, 1.5 – $1.6 \times$ as long as wide, tightly applied on rostrum, silvery grey pollinose, sparsely short-setose. Rostrum small.

Thoracic nota subshining brownish green, sides of scutum and scutellum bronze to cupreous; subdorsal stripe broad; humeral callus and extreme sides of notopleural depression dark grey pollinose, pleura and coxae black, and dark grey pollinose. Chaetotaxy: Mesonotal bristles fairly long; 5 dorsocentrals, 1 humeral with a minute setula in front, 1 posthumeral, 2 notopleurals, 1 supra-alar, 1 postalar, and 2 scutellars; proepisternum with 2–7 short, fine, black hairs on lower portion.

Legs slender, simple, black and clothed with black hairs and bristles. Front leg: Cx_1 sparsely clothed with short black hairs in front; f_1 with a posteroventral row of fine, longish, suberect, black setae and an anteroventral row of similar but shorter setae; t_1 rather densely clothed beneath with suberect fine setae, without strong posteroventral bristles except preapical posteroventral; front basitarsus (Fig. 23) much long and slender, 0.73 – $0.75 \times$ as long as t_1 , clothed above with short suberect setulae, beneath with longish suberect hairs $2 \times$ as long as basitarsus thickness; 2nd tarsomere simple in structure, $0.5 \times$ as long as basitarsus. Middle leg: F_2 with 1 (rarely 2) strong ventral bristle at basal $1/3$, and an anterior preapical bristle. Hind leg: F_3 short setose beneath. Claws, empodia and pulvilli ordinary in size and shape.

Wing faintly greyish, infuscated along discal crossvein and wing apex; wing shape and venation simple, discal crossvein a little oblique, posterodistal corner of discal cell acute; M_3 as long as discal crossvein. Halter yellow.

Abdomen subshining brownish green to bronze, black setose, 1st tergum

with longish marginal bristles. Genitalia small; cercus short, but much slender, clothed with several longish brown setae.

Length: Body 3.2–3.4 mm; wing 4.5–4.7 mm.

♀. Very much resembling the male, but slightly larger; 3rd antennal segment a little shorter, palpus darker; cx_1 shorter setose in front, t_1 and front basitarsus without longish ventral setae or hairs; the ventral bristles of f_2 much weaker.

Length: Body 3.4–3.7 mm; wing 4.7–5.0 mm.

Holotype ♂, Thudam (3,500–3,800 m), 27°45'N, 87°31'E – 27°46'N, 87°33'E, E. Nepal, 27. vi. 1972 (H. SHIMA).

Paratypes: 8♂♂12♀♀, same locality as holotype, 24. vii–4. viii. 1972 (H. SHIMA, J. EMOTO, including Malaise trap captures) (KMNHIR 100106–107) (KMNHIR 100108–109); 1♂2♀♀, NE of Thudam (4,000 m), 28–30. vi. 1972 (H. SHIMA, J. EMOTO); 3♂♂, Thudam (3,500 m)–Tanga La (4,700 m), 5. vii. 1972 (H. SHIMA, J. TENZIN) (KMNHIR 100104–105); 1♂1♀, Topke Gola (3,700 m), 8. vii. 1972 (J. EMOTO) (KMNHIR 100110); 1♂, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (J. EMOTO); 1♂, Topke Gola (3,700 m)–Thurukpa (2,600 m), 9. vii. 1972 (J. EMOTO); 1♀, Salpa La (3,000–3,200 m), 23. vii. 1981 (J. EMOTO).

Remarks: *D. nigripilosus* resembles the *quadrisetosus*-group in the simple legs and small, simple male genitalia, but it has five dorsocentrals, the silvery grey palpi, the fairly strong vertical bristles and the slenderer male cerci. This species has no pale hairs or setae even on the lower portion of occiput, by which it is readily distinguished from all the known species of *Diostracus* except the *antennalis*-group from Japan. This group is apparently differs from the present new species in the apically foliate male antennal arista, the six dorsocentrals and the presence of each one sutural and postsutural bristles.

The *umbrinervis*-group

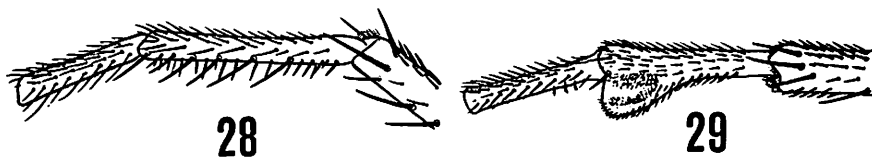
This group is represented by the following new species, *D. umbrinervis*.

Diostracus umbrinervis sp. nov.

♂. Head green, often with coppery tinge; frons and face dull and much darker, occiput greyish brown pollinose; verticals weak, golden yellow lower occipital setae rather thick. Antenna: First segment moderately long, bare or setose; 3rd $1.2\times$ as long as thick, triangular, pointed apically; arista subbasal, its basal segment as thick as basal portion of apical segment. Palpus $1/2$ as long as eye height, $2\times$ as long as wide, gently widening to the middle, roundly obtuse apically, glittering golden to yellowish green.

Mesoscutum dull green to coppery, more cupreous sublaterally, subdorsal stripes slightly darker, humeral callus and notopleural depression ash grey; pleura and coxae light grey pollinose. Chaetotaxy: Most of notal bristles rather thick; 5 fairly long dorsocentrals, 1 humeral with a weak seta in front, 1 posthumeral, 2 notopleurals, 1 supra-alar, 1 postalar, 2 scutellars with an outer pair of minute setae; proepisternum with several yellow hairs on lower portion.

Legs moderately long, simple in structure, black with bronze to greenish tinge on f and t, front and middle trochanters tawny. Front leg: Cx₁ densely with stiff yellow hairs longer towards base (the longest as long as cx₁ width); f₁ posteroventrally with fine longish erect yellow setae on basal 2/3; t₁ with a complete ciliation of 6–9 posteroventral bristles which are as long as anterodorsal and posterodorsal bristles; front tarsus slender, basitarsus (Fig. 28) 1/2 as long as t₁, with an anteroventral row of short erect spines (a little shorter than basitarsus thickness), and a posteroventral row of longer subdecumbent bristles; 2nd tarsomere 0.6× as long as basitarsus, without any ornamentation. Middle leg: F₂ bare beneath; t₂ short-setose beneath, and with a posterior ciliation of fine, erect, black setae as long as t₂ width. Hind leg: F₃ and t₃ simple. Claws empodia and pulvilli of ordinary size and shape for *Diostracus*.



Figs. 28–29. Basal 2 tarsomeres of ♂ left front tarsi, posterior aspect.

28. *Diostracus umbrinervis* sp. nov., 29. *Diostracus tangalensis* sp. nov.

Wing faintly greyish, distinctly and broadly infuscated brownish along veins, particularly along discal crossvein. No special modification in wing shape and venation; discal crossvein straight, a little oblique; M₃ 1.3× as long as discal crossvein. Halter yellow.

Abdominal terga subshining green with a slight cupreous tinge, greyish pollinose at sides; 1st tergum with black marginal bristles; posterior part of 4th sternum angularly projected ventrally in lateral aspect, its thickness at posterior margin 1/2 of 4th tergum thickness. Genitalia very small, cercus protruded from ventrodiscal part of epandrium, very small, triangular, sparsely clothed with short yellow hairs.

Length: Body 3.8–3.9 mm; wing 4.9–5.1 mm.

♀. Resembling the male, palpus short and brown; anterior setae of cx₁ short, front basitarsus almost evenly short-setose beneath, terminalia compressed laterally.

Length: Body 3.7–5.0 mm; wing 5.1–5.7 mm.

Holotype ♂, Salpa La (3,000–3,050 m), 27°27'N, 86°55'E, E. Nepal, 29. vii. 1981 (J. Emoto).

Paratypes: 2♂♂5♀♀, same locality as holotype (2,900–3,050 m), 28–29. vii. 1981 (J. Emoto, including Malaise trap and light trap captures) (KMNHIR 100111–113).

Remarks: *D. umbrinervis* somewhat resembles *D. inornatus* and its allies from Japan in the simple male abdomen, but it is quite distinct from them by the five dorsocentrals and absence of sutural and postsutural bristles. It is also distinguished from most of the known species by the distinctly dark-bordered wing veins.

The *tangalensis*-group

This group is represented by the following new species, *D. tangalensis*.

Diostracus tangalensis sp. nov.

♂. Head green, frons and vertex dull blackish bronze, occiput greyish pollinose, face and clypeus much thinly greyish pollinose; verticals fairly strong; yellow lower occipital setae short. Antenna: First segment short, setose above; 3rd segment a little longer than thick, raised above subbasally, then gently tapering to rather broad, rounded, distal margin; arista subbasal and with thick basal segment. Palpus $0.4\times$ as long as eye height, $1.6\times$ as long as wide, gently widening to the middle, then tapering to broadly rounded distal margin, glittering light silvery blue.

Mesoscutum subshining green, with indistinct bronze subdorsal stripes, and sides of scutum and scutellum bronze to cupreous, humeral callus and extreme lateral margin of notopleural depression greyish pollinose; pleura greyish pollinose. Chaetotaxy: Six fairly long dorsocentrals (in the holotype the left row of dorsocentrals consisting of only 5 bristles); 1 strong and 1 slightly weaker humerals, 1 posthumeral, 2 notopleurals, 1 sutural (absent in a male paratype), 1 supraalar, 1 postalar, and 2 scutellars; proepisternum with several fine, short, yellow hairs on lower portion.

Legs rather stout, blackish with a slight greenish tinge, front trochanter tawny. Front leg short-setose; cx_1 ash grey pollinose, with short, fine, pale hairs and black distal bristles on anterior surface; f_1 practically bare beneath; t_1 with 2–3 short posteroventral bristles; basitarsus (Fig. 29) short-setose, $0.4\times$ as long as t_1 , gently expanding ventrally beyond the middle, with its apical portion $2\times$ as thick as subbasal portion; 2nd tarsomere $0.8\times$ as long as basitarsus, with a minute basal denticle. Middle leg: F_2 with an anteroventral row of weak setae and

armed posteroventrally with a dense ciliation of strong bristles which are $1/2-2/3$ as long as f_2 thickness; t_2 beneath with a double row of short, suberect setae. Hind leg: F_3 short-setose beneath. Claws, empodia and pulvilli moderate in size and normal in shape.

Wing simple in shape and venation, faintly greyish with indistinct dark band along discal crossvein, which is slightly arched inwards before middle; postero-distal corner of discal cell a little produced; M_3 $1-1.2 \times$ as long as discal crossvein.

Abdomen subshining brownish green, black setose; posterior portion of 4th sternum strongly projecting ventrally into a triangular, posteriorly concave, lamellate process ending in a minute pilose circular lobe; height of 4th sternum at posterior margin $0.5-0.6 \times$ of 4th tergum height. External appearance of genitalia almost as in *D. umbrinervis*, but cercus longer setose.

Length: Body 3.3–3.7 mm; wing 4.3–4.7 mm.

♀. Resembling the male; 3rd antennal segment $0.8-0.85 \times$ as long as thick, less produced distally; palpus shorter, greyish pollinose, in some light shining silvery grey; posteroventral bristles of t_1 3–4 in number; front tarsus slender; no strong bristles on ventral surface of f_2 ; t_2 without suberect setae beneath; abdomen not strongly compressed terminally; three females having 6/6, 5/6, 5/5 dorsocentrals, respectively.

Length: Body 3.5–3.9 mm; wing 4.5–4.6 mm.

Holotype ♂, Tanga La (4,300–4,600 m), $27^{\circ}40'N$, $87^{\circ}36'E$, E. Nepal, 6. vii. 1972 (H. SHIMA).

Paratypes: 3♂♂2♀♀, same locality and data as holotype (H. SHIMA, H. MAKIHARA) (KMNHIR 100114); 1♀, Thudam (3,500 m)–Tanga La (4,700 m), 5. vii. 1972 (J. TENZIN) (KMNHIR 100115); 1♂, Tanga La (4,300–4,700 m), 7. vii. 1972 (J. EMOTO).

Remarks: *D. tangalensis* is one of the inhabitants of the highest altitudes in the genus *Diostracus*. It occurs together with *D. alticola* sp. nov. at the zones of alpine herbaceous plants and of lichens in the cirque of Tanga La. *D. tangalensis* resembles *D. umbrinervis* in the external appearance of male abdomen, but *tangalensis* is distinguished from the latter by its six dorsocentrals and one sutural bristle in both sexes, and by the apically dilating front basitarsus in the male. It should be noted that this species is only one Nepalese species of *Diostracus* having the sutural bristles.

The *nebulosus*-group

This group is represented only by *D. nebulosus* Takagi.

***Diostracus nebulosus* TAKAGI**

Diostracus nebulosus, TAKAGI, 1972, J. nat. Hist., 6: 531–536, (type-locality: Nepal, 27°58'N, 85°00' E, 11, 100 feet).

D. nebulosus was described based on the specimens from high altitudes (9,900–11,100 feet) just north of Kathmandu, and from Ulleri (2,010 m). The original material from the two areas show geographical variation in several morphological respects, and TAKAGI (1972) illustrated the variation of the lengths of middle femora and position of ventral spine on them. Concerning this respect, specimens from Papun–Thurukpa and from Chiaksila of the present material are similar to those from Ulleri, but more or less shift to materials around the type-locality, to which our specimens from four other localities are similar.

Although it has a wide distribution from central to eastern Nepal, it seems to have a rather low vertical distribution, judging from the fact that only a female specimen had been obtained from Thudam area (3,500–3,700 m), the most extensively surveyed area by our expedition.

Specimens examined: 1 ♂, Tank (1,900 m)–Penmaten (2,600 m), 29. vi. 1972 (H. MAKIHARA); 5 ♂♂4 ♀♀, Papun (2,100 m)–Thurukpa (2,600 m), 11. vi. 1972 (J. EMOTO); 1 ♀, Papun (2,100 m), 15. vii. 1972 (H. SHIMA); 1 ♀, Thudam (3,500–3,700 m), 24. vi. 1972 (J. EMOTO); 1 ♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (H. SHIMA, J. EMOTO); 6 ♂♂1 ♀, Chiaksila (2,730–2,800 m), 13–16. vii. 1981 (J. EMOTO); 2 ♂♂4 ♀♀, Salpa La (2,750–3,200 m), 23–24. vii. 1981 (J. EMOTO); 1 ♂3 ♀♀, Sukhe Kohla (2,050 m), 23. vii. 1981 (J. EMOTO); 2 ♂♂, Tragdobuk (2,950–3,180 m), 15. viii. 1981 (J. EMOTO).

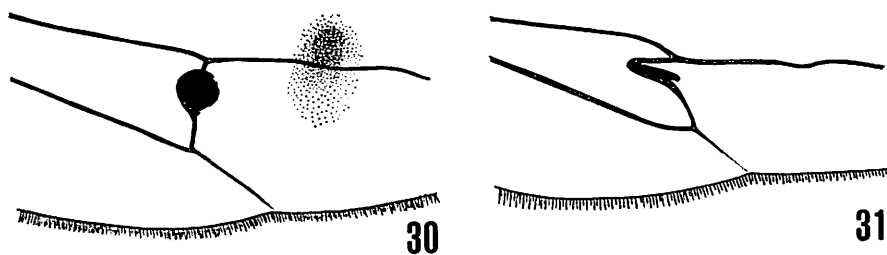
The following two new species, *D. shimai* and *D. alticola*, should be included in the *unipunctatus*-group in a wide sense, but they abundantly differ from the typical members of the group.

***Diostracus shimai* sp. nov.**

Holotype ♂. Head metallic green, greyish brown pollinose, frons and face narrowly dull blackish along eye margin; clypeus subshining, somewhat produced forwards; vertical bristle strong, golden yellow setae on lower occiput rather scanty. Antenna: First segment elongate, $0.4\times$ as long as eye height, with several setulae on dorsal surface; 3rd segment $0.6\times$ as long as 1st segment, $1.2\times$ as long as thick, much tapered beyond the middle to pointed dorsodistal corner, which bears arista. Palpus $0.6\times$ as long as eye height, $2.6\times$ as long as wide, with roundish distal margin; the palpus brown in colour, glittering yellowish green, but more greenish towards tip.

Mesoscutum subshining green, most parts tinged with bronze, subdorsal stripes rather obscurely bordered; humeral callus and notopleural depression white pollinose; pleura and coxae ash grey pollinose. Thoracic chaetotaxy: Five dorsocentrals, the 4 anterior dorsocentrals moderately long; 1 humeral with a weak black seta in front, 1 posthumeral close to humeral callus, 2 notopleurals, 1 supra-alar, 1 postalar, and 2 scutellars and a tiny setula lateral to left scutellar.

Legs blackish, with greenish to cupreous tinges on femora; front trochanter tawny. Front leg: Anterior surface of cx_1 clothed with short, fine, yellow hairs and with an indefinitely bordered subapical patch of fine black setae and black anterodistal bristles; f_1 short-haired, and bearing 5–6 black posteroproximal bristles in a mass, beneath with scattered, fine, short hairs; t_1 with anterodorsal and posterodorsal bristles rather short, and with a posteroventral row of 7–9 bristles from apical $1/2$ to $2/3$, of which the longest towards base is $1.5\times$ as long as t_1 thickness; basitarsus as long as 2nd tarsomere, weakly curved anteriorly at the middle, considerably raised ventrally from the middle to subapical portion, the raised portion weakly emarginate at the middle; basitarsus short setose above, beneath with a posteroventral row of longish setae and a row of anteroventral short, curved, bluntly ended spines on basal $1/2$, the row replaced by dense mass of shorter, straight spinules on apical $1/2$; 2nd tarsomere slender, with an anteroventral row consisting of minute spinules on basal $1/4$, several stiffer bristles before the middle, and longer finer setae on apical $1/2$. Middle leg: F_2 with an anteroventral row of short bristles and a posteroventral row of ca. 13 longer, usually blunt-tipped bristles; t_2 short setulose beneath. Hind leg: F_3 with ventral ciliation of long yellow bristles on middle $1/2$, the longest $0.3\times$ as long as f_3 length. Tarsi with ordinarily developed empodia and pulvilli.



Figs. 30–31. Male right wings, posteromedian portion.
30. *Diostracus shimai* sp. nov., 31. *Diostracus alticola* sp. nov.

Wing (Fig. 30) faintly greyish; discal crossvein semicircularly curved inwards on anterior $1/2$ only leaving a short straight anterior section, the curved portion embracing a jet-black circular brand, a short veinlet also arising from the crossvein and bordering anterodistal portion of the brand; posterodistal corner of discal

cell slightly produced; M_3 as long as the distance between tips of discal cross-vein; wing also marked with a brownish grey circular marking (not sharply bordered) at basal $1/4$ of M_1 , which is weakly sinuate and a little thickened on the marking, faint greyish brown clouds at tips of R_{4+5} , M_1 and M_3 . Halter yellow.

Abdomen cylindrical, rather robust, subshining green, short black-setose except long marginal bristles on 1st tergum; dorsal margin of abdomen gently curved downwards beyond 4th tergum, then epandrium being rather subventral, never projected above; cercus elongate, $4\times$ as long as wide, dark brown, with yellowish marginal ciliation longer on apical $1/2$, the longest at apex as long as cercus.

Length: Body 5.0 mm; wing 6.3 mm.

A paratype ♂ from Salpa La, some 70 km WSW of the type-locality is larger (length of body 5.6 mm, that of wing 7.4 mm) and has longer 3rd antennal segment ($1.87\times$ as long as thick).

♀. Resembling the male, except for the ordinary sexual differences in the genus; palpus smaller and darker, 3rd antennal segment $0.9\times$ as long as thick, with apex less produced; cx_1 white haired in front, with only black anterodistal setae; f short-setose beneath except prominent posteroventral bristles on f_2 ; wing darker, discal crossvein slightly arched inwards, very broadly dark bordered; dark cloud on M_1 fainter, no jet-black band.

Length: Body 5.1 mm; wing 6.8 mm.

Holotype ♂, N E of Thudam (4,000 m), $27^{\circ}47'N$, $87^{\circ}36'E$, E. Nepal, 25. vi. 1972 (H. SHIMA).

Paratypes: 1♀, same locality and data as holotype (Y. NISHIDA); 1♂, Salpa La (3,000–3,200 m), 23. vii. 1981 (J. EMOTO) (KMNHIR 100116).

Remarks: Although *D. shimai* has no close ally, it seems to have some phylogenetic affinity to the *unipunctatus*-group judging from the possession of the combination of the following characters; the elongate 1st antennal segment, the anterior subapical cluster of black setae on cx_1 , the posteroproximal cluster of stiff black setae of f_1 , a row of short, black, curved spines on the front basitarsus, the jet-black rounded nodule close to the discal crossvein. But the new species can not be considered to be a typical member of the group on the following respects; 5 dorsocentrals, apically thickened front basitarsus, subventral epandrium, etc.

Diostracus alticola sp. nov.

♂. Frons and vertex dull blackish brown, occiput dark greyish brown, face and clypeus with greenish sheen; vertical bristles strong, yellow lower occipital setae rather stiff. Antenna with 1st segment $1/5$ as long as eye height; 3rd segment as long as thick, slightly produced dorsodistally, with subapical arista.

Palpus broad, $0.6\times$ as long as eye height, $1.7\times$ as long as broad, glittering bluish silvery.

Thorax sombre in colour, mesoscutum mostly dull dark brown to dark bronze, only dorsomedian and dorsocentral stripes shining brownish green, subdorsal stripes dull blackish, as wide as or a little narrower than the dorsomedian stripe, much sharply bordered; pleura greyish pollinose; humeral callus and notopleural depression dull grey. Chaetotaxy: Five dorsocentrals, 1 humeral with a weaker bristle in front, 1 posthumeral, 2 notopleurals, 1 supra-alar, 1 postalar, 2 scutellar bristles.

Legs entirely black with cupreous sheen on femora. Front leg: Anterior surface of cx_1 grey, densely clothed with short, stiff, erect, yellow setae, and with a group of similar but black setae subapically and black anterodistal bristles; front trochanter with a few minute curved black setulae beneath; f_1 with scattered short setae posteroproximally, and several erect ventral bristles; t_1 with anterodorsal and posterodorsal bristles rather short, a posteroventral row of 3–4 strong bristles on middle $1/2$, the longest posteroventral bristle $2.7\times$ as long as t_1 thickness; basitarsus short-setose above, beneath with a uni- to biserial, short, black spinules which are longer basally, much reduced to minute spinules towards tip, and with a posteroventral row of longish suberect setae; 2nd tarsomere as long as basitarsus, emarginate beneath subbasally, bearing 2 spinules on weak ventroproximal protuberance, a row of short anteroventral spinules and a row of longer posteroventral setae. Middle leg: Cx_2 armed anterodistally with densely set strong black bristles; f_2 much tapered on apical $1/2$, bearing ca. 10 long black bristles on anterior to anteroventral surfaces and ca. 5 long yellow curved setae ($4\times$ as long as f_2 thickness) on basal $2/5$; t_2 short-setose beneath. Hind leg: Cx_3 with an anterodistal brush of several strong bristles; f_3 only short-setose beneath.

Wing (Fig. 31) distinctly infuscated to brownish grey, with strong veins; discal crossvein acutely and deeply arched to discal cell on its anterior $1/2$, i.e. running proximally for distance equal to $0.6\times$ direct distance between tips of discal crossvein, then making a hairpin curve, running parallel to M_1 to the level of anterior end of the crossvein, gradually diverging from M_1 and forming an acute posterodistal corner of discal cell; a slender jet-black band in cell M_3 close to more or less thickened posterior section of the hairpin curve of discal crossvein; M_3 as long as distance between tips of discal crossvein.

Abdomen subshining brown, greyish brown pollinose, with a slight cupreous sheen, black-haired and bristled, hairs on sides of terga yellowish; sterna dull brownish grey; 3rd sternum projecting posteromedially; 4th sternum with a pair of oval protuberances on hind margin. Cercus slender, $6\times$ as long as wide, marginally ciliated with apically curved yellow setae, of which the apical 4–5 are extremely long, $4/5$ as long as cercus.

Length: Body 3.6–4.2 mm; wing 3.8–4.4 mm.

♀. Resembling the male except the ordinary sexual differences. Palpus smaller, greyish pollinose; thoracic nota dull dark brown, greenish sheen between rows of dorsocentrals almost disappearing, so that the subdorsal stripes much indistinct. Legs: Cx₁ without subbasal patch of black setae; f only sparsely short setose beneath; posteroventral bristles of t₁ 1–2 in number.

Wing without slender jet-black brand, discal crossvein distinctly angulated before the middle, dark bordered. Terminalia compressed.

Holotype ♂, Tanga La (4,300–4,600 m), 27°40'N, 87°36'E, E. Nepal, 6. vii. 1972 (H. SHIMA).

Paratypes: 1♀, same data as holotype (KMNHIR 100118); 2♂♂3♀♀, Thudam (3,500 m)–Tanga La (4,700 m), 5–7. vii. 1972 (H. SHIMA, Y. NISHIDA, J. TENZIN) (KMNHIR 100117).

Remarks: *D. alticola* is one of the *Diostracus* species inhabiting the highest altitudes. As this new species was not collected at Thudam proper, 2 male and three female paratypes from “Thudam–Tanga La” were probably collected at Tanga La. Tanga La is a pass across a cirque above the timber line. *D. alticola* is, of course, not a typical member of the *unipunctatus*-group, but seems to have affinity with the group judging from the chaetotaxy of front leg and the jet-black brand close to the discal crossvein.

The *unipunctatus*-group

♂. Third antennal segment rounded, oval or rarely much lengthened (2× thickness), with apical to dorsal arista. Occiput clothed with many long golden yellow hairs below neck; vertical bristles rather short to fairly long. Palpus moderately large, 0.5–0.7× as long as vertical diameter of eye, long oval, loosely applied on rostrum, and glittering bluish to purplish.

Thoracic chaetotaxy: Six dorsocentrals (in abnormal specimens 7 or more); 1 humeral with 1–3 minute hairs, 1 posthumeral, 2 notopleurals, 1 supra-alar, 1 postalar and 2 scutellars, the last rarely absent; proepisternum with a group of yellow hairs on each upper and lower portions.

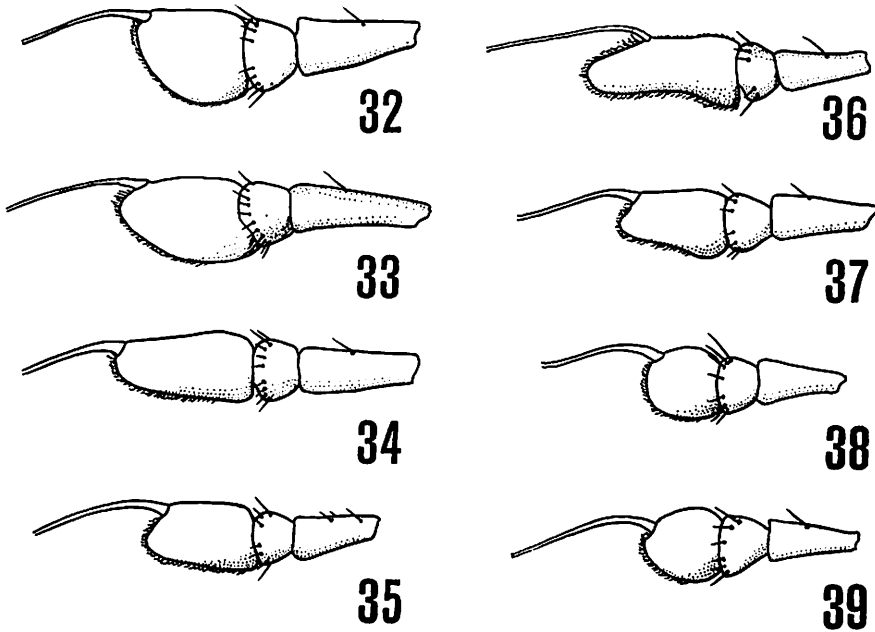
Legs slender and rather simple in structure. Cx and trochanters normal in shape; cx₁ densely clothed with erect, often curled, golden yellow hairs on basal 1/2, and anteriorly with shorter, erect, subapical black setae which often form a clump. Front leg: F₁ subbasally with one to several distally curved short posterior bristles, and several erect ventral setae which curved proximally; t₁ with several strong posteroventral bristles on distal 1/2–2/3; front tarsus slender, its basitarsus nearly as long as 2nd tarsomere, bearing a ventral row of short, stiff, somewhat flattened spines which are curved posteriorly and rather blunt-tipped, the basitarsus also with a posteroventral row of longer suberect bristles. Middle

and hind legs long and slender; f_2 often with long bristles and yellow hairs beneath; f_3 rarely with long yellow hairs. Tarsi normally pollinose and short-setose; empodium and pulvilli well developed, of ordinary size.

Wing moderately elongate, clear to greyish, with a spherical or oval jet-black nodule in cell M_3 attaching to discal crossvein which forms a thickened inward semiloop accepting proximal 1/2 of the nodule.

Abdomen moderately large, sides of posterior terga often clothed with golden hairs; 1st to 4th sterna without ornamentations except vestiture of golden yellow hairs in many species. Genitalia compact, cercus rather elongate, and long ciliated.

♀. Resembling males. Palpus shorter and narrower, brownish pollinose. Legs all simple and without specialized spines or long yellow hairs or bristles on femora. Wing without black nodule at discal crossvein.



Figs. 32-39. Left antennae, apical portion of arista omitted.

32. *Diostracus nepalensis* sp. nov., ♂, 33. *Diostracus gymnoscutellatus* sp. nov., ♂, 34. *Diostracus auripilosus* sp. nov., ♂, 35. *Diostracus parvipunctatus* sp. nov., ♂, 36. *Diostracus longicornis* sp. nov., ♂, 37. Ditto, ♀, 38. *Diostracus rotundicornis* sp. nov., ♂, 39. *Diostracus unipunctatus* sp. nov., ♂,

The known species of the *unipunctatus*-group is only *Diostracus saigusai* TAKAGI, 1968 occurring at mountainous region of Taiwan. Now the group is known to be best represented in Nepal, where four out of seven species occur sympatrically

in Thudam (3,500 m), two out of four species from Salpa La area (70 km WSW of Thudam) are not represented in the extremely rich collection from Thudam. These distributional data suggest that numerous additional species of this group are distributed in the mountainous area from Nepal to Fukien through Bhutan, Assam, northern Burma and western China.

The *unipunctatus*-group of the strict sense includes the following seven species and *saigusai*, while *D. shimai* and *D. alticola* seem to have affinity with this group as already stated.

***Diostracus nepalensis* sp. nov.**

♂. Head large, the largest distance from upper extremity (usually ocellar tubercle) to distal margin of labella more than 1.7 mm. Face usually subshining green to blackish green, occasionally purplish. Viewed anteriorly, frons with a vertically longer light grey pollinose median marking which is situated in front of ocellar tubercle, nearly as broad as anterior ocellus and is occasionally very narrowly extended to eye-margin along border between vertex and frons, but in this case the extended portion never broadly dilated downwards along eye-margin, sides of antennal sockets never broadly greyish. Vertical bristles weak, at most $2/3$ as long as postverticals, or $1/2$ as long as ocellar bristles. Third antennal segment (Fig. 32) $1.1-1.4\times$ as long as thick, strongly tapered to roundly produced apex, and with subapical arista. Palpus $0.6\times$ as long as eye height.

Mesonotum subshining green, dark brownish at sides, with a pair of bronze subdorsal stripes; humeral callus, notopleural depression and pleura silvery white pollinose. Chaetotaxy: Five anterior dorsocentrals rather short in comparison with body size, and 2nd to 4th dorsocentrals usually $250-300\ \mu$ long, 6th the longest; scutellum with a pair of strong scutellar bristles (rarely either one of them absent, or both rather abbreviated).

Front leg: Cx_1 with anteroproximal golden hairs sparse, the longest a little more than Cx_1 width, not curled apically; a clump of black setae of Cx_1 occupying an elongate oval area close to distal margin; f_1 with 1-3 (mostly 3) short postero-proximal black bristles arranged in a row parallel to long axis of f_1 ; t_1 with 6-7 posteroventral bristles (excluding preapical posteroventral), the longest $1.6\times$ as long as t_1 thickness; basitarsus almost as long as 2nd tarsomere. Middle leg: F_2 gently swollen from subbasal portion to before the middle, there the femur bearing ca. 3 subdecumbent black anteroventral bristles, 2-4 suberect black ventral bristles (proximal one may be brownish) $0.8\times$ f_2 thickness in length, and ca. 10 very long yellow hairs almost arranged in a regular row distally. Hind leg: F_3 lacking in long yellow hairs beneath, but bearing 2-8 (mostly 4-5) short black bristles arranged in 1-2 rows for middle $1/4-1/3$ on anteroventral to posteroventral surfaces.

Wing (Fig. 40): Black nodule at discal crossvein oval, with the largest diameter (measurements of nodule do not include thickened discal crossvein bordering the nodule) ca. $1.4\times$ of the smallest diameter, or ca. $0.38\times$ as long as distance between tips of the crossvein, occupying from middle of the crossvein to its posterior $1/5$, posterior straight section of the crossvein roughly $1/4$ – $1/3$ of anterior straight section; posterodistal corner of discal cell weakly produced.

Abdomen: Fourth tergum densely clothed laterally with golden yellow hairs which are shorter than those on 3rd sternum, much less in thickness and length than those on lower occiput, and clothed area just below the sublateral black spots to lateral margin of the tergum; lateral margin of 5th tergum with long golden yellow hairs; 3rd and 4th sterna densely clothed with much long, curled golden yellow hairs. Posterodorsal angle of epandrium strongly produced into a short projection; cercus strongly tapering apically, with lateral ciliation on inner margin interrupted subapically.

Length: Body 6.2–7.3 mm; wing 8.6–9.8 mm.

♀. Resembling the male; palpus shorter, narrower, dark greyish brown pollinose; 3rd antennal segment shorter, almost as long as thick, with apical arista. Legs simple, vestitures shorter; cx_1 with shorter yellow hairs and clump-forming black setae much weaker and sparser; f_1 almost bare beneath; front metatarsus simple; f_2 sparsely clothed with short fine yellow hairs on basal $1/2$, occasionally mixing 1–2 fine black setae; f_3 without anteroventral bristles.

Wings without black nodule at discal crossvein, which is almost straight, discal cell more or less produced. Brownish pollinose posterior bands of abdominal terga narrow, in 2nd tergum anterior border of the band extending near the middle of tergum, but not reaching to its anterior portion.

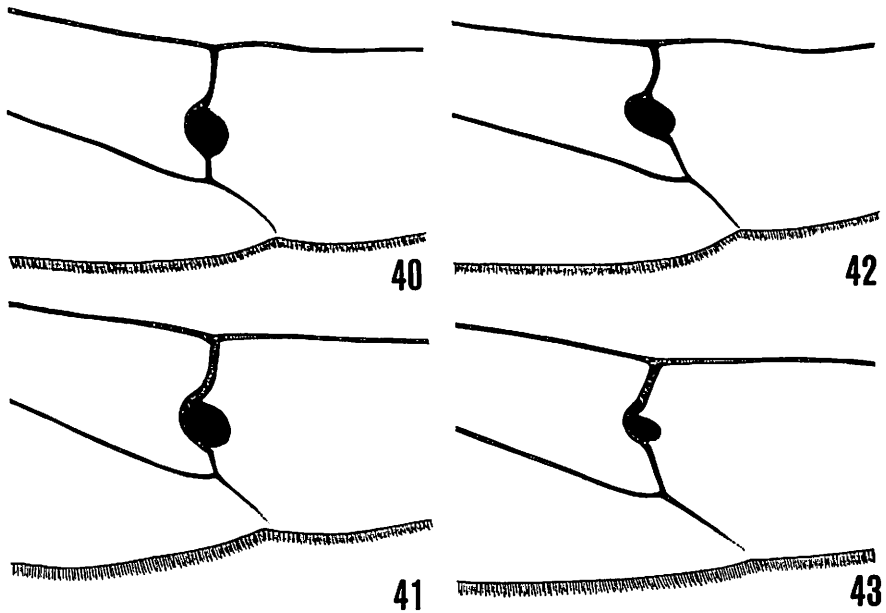
Length: Body 6.1–7.5 mm; wing 8.5–9.7 mm.

Holotype ♂, Thudam (3,500–3,800 m), $27^{\circ}45'N$, $87^{\circ}31'E$ – $27^{\circ}46'N$, $87^{\circ}33'E$, E. Nepal, 19. vi. 1972 (H. SHIMA).

Paratypes: 3♂♂2♀♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (H. SHIMA, J. EMOTO); 34♂♂31♀♀, same locality as holotype, 18. vi.–9. vii. 1972 (H. SHIMA, J. EMOTO, Y. NISHIDA, including Malaise trap captures) (KMNHIR 100119–132) (KMNHIR 100139–147); 9♂♂15♀♀, NE of Thudam (4,000 m), 25. vi. 1972 (H. SHIMA, J. EMOTO) (KMNHIR 100133–135) (KMNHIR 100148–151); 1♂, Topke Gola (3,250 m), 14. vii. 1972 (H. SHIMA); 1♂2♀♀, Tanga La (4,700 m)–Topke Gola (3,700 m), 7. vii. 1972 (J. EMOTO); 9♂♂12♀♀, Topke Gola (3,700 m), 9. vii. 1972 (J. EMOTO) (KMNHIR 100136–138) (KMNHIR 100152–155); 3♂♂3♀♀, Salpa La (3,000–3,200 m), 23. vii. 1981 (J. EMOTO); 1♂, Jumbesi Khola (3,450 m), 11. viii. 1981 (J. EMOTO, Malaise trap); 1♂, Tragdobuk (2,950–3,180 m), 15. viii. 1981 (J. EMOTO).

Remarks: *D. nepalensis* is similar to *D. saigusai* TAKAGI from Taiwan,

particularly in the apical portion of discal cell of wing, but the former is easily distinguished from the latter by the larger-sizes of body and wing, and in the male by the longer front basitarsus (relative lengths of the basitarsus and front 2nd tarsomere 22: 17 in *saigusai*), and vestiture of ventral surface of the middle femur (only 3 long yellow hairs subbasally in *saigusai*).



Figs. 40–43. Male right wings, posteromedian portion.

40. *Diostracus nepalensis* sp. nov., 41. *Diostracus gymnoscuteallatus* sp. nov., 42. *Diostracus auripilosus* sp. nov., 43. *Diostracus parvipunctatus* sp. nov.

***Diostracus gymnoscuteallatus* sp. nov.**

Closely resembling *D. nepalensis* but differing as follows.

♂. Face purplish blue, contrasting with green to bluish green in males of *nepalensis* from same localities (Salpa La area). Third antennal segment (Fig. 33) 1.5–1.9× as long as thick, apical portion more produced, arista practically dorsal; palpus glittering, more silvery; scutellum without a pair of strong scutellar bristles, rarely with 1–2 short setulae homologous with outer pair lateral to scutellar bristles found in many *Diostracus* species; dorsocentral bristles shorter, 2nd to 5th dorsocentrals usually shorter than 250 μ ; ventral golden hairs of f_2 shorter, finer and much smaller in number, the long ones (1.2–1.3× f_2 thickness) confined before the middle; f_3 clothed only with short, ordinary setulae, lacking strong bristles except an anterior preapical one; black nodule (Fig. 41) at discal

crossvein almost as in *nepalensis*, posterodistal corner of discal cell usually a little acuter; genitalia with shorter cercus not strongly tapering towards tip and bearing inner marginal ciliation continuous to tip of cercus.

Length: Body 5.6–6.4 mm; wing 7.3–8.3 mm.

♀. Much resembling *D. nepalensis*, but distinguished from it in the following respects; lower occipital hairs and dorsocentrals shorter; wings darker, almost uniformly infuscated greyish brown; scutellum without scutellar bristles; brownish pollinose posterior bands of abdominal terga broader, in 2nd tergum the band expanding to or close to anterior margin of the tergum on dorsal to subdorsal portions.

Length: Body 5.7–7.7 mm; wing 8.0–8.8 mm.

Holotype ♂, Salpa La (2,880 m), 27°27'N, 86°55'E, E. Nepal, 29. vii. 1981 (J. Emoto).

Paratypes: 10♂♂9♀♀, same locality as holotype, 23–29. vii. 1981 (J. Emoto, including Malaise trap and light trap captures) (KMNHIR 100156–158) (KMNHIR 100162–163); 11♂♂4♀♀, Chiaksila Kharha (2,730–2,800 m), 13–16. vii. 1981 (J. Emoto, including Malaise and light traps captures) (KMNHIR 100159–161) (KMNHIR 100164); 1♂, Tragdobuk (2,750–2,800 m), 15. viii. 1981 (J. Emoto); 1♂ Chiaksila Kharka (2,800 m), 20. vii. 1981 (J. Emoto, Malaise trap).

Remarks: *D. gymnoscutellatus* much resembles *D. nepalensis* in possessing almost all the characters common, but it is utterly different from *nepalensis* by the absence of strong scutellar bristles, a quite unique, abnormal character state. It is also distinguished from *nepalensis* by its smaller sizes of body and wing and few structural characters stated in the description. This species is sympatric with *nepalensis* in Salpa La and Tragdobuk, and seems to be commoner than *nepalensis*. *D. gymnoscutellatus*, however, almost certainly does not occur in Thudam area, so that it probably has lower vertical distribution than the compared species. The new species also resembles *D. saigusai* in the plain hind femur, but it is distinguished from the latter by the longer 3rd antennal segment with dorsal arista, the distally distributed yellow hairs on ventral surface of the middle femur, the subequally long front basitarsus and 2nd tarsomere, etc.

Diostracus auripilosus sp. nov.

Resembling *D. nepalensis*, but differing as follows.

♂. Head smaller, the largest distance from ocellar tubercle to distal margin of labella at most 1.6 mm. Viewed anteriorly, upper 1/2 of frons almost entirely greyish pollinose, thus the sides of frons along eye-margins broadly greyish pollinose downwards beyond the middle; sides of antennal sockets also broadly light grey pollinose. Vertical bristles strong, usually as strong as postverticals or

stronger, longer than $2/3$ length of ocellar bristles. Third antennal segment (Fig. 34) $1.5-1.9$ (mostly 1.7) \times as long as thick, gently tapering towards bluntly truncate distal margin, arista arising from dorsodistal corner of the segment.

Mesonotum more densely greyish pollinose; 5 anterior dorsocentrals longer, usually $400-500\ \mu$ long. Front leg: Cx_1 with sparser long yellow hairs; f_1 with 4-6 posteroproximal black bristles in a mass, not in a row; f_2 with long yellow posteroventral hairs scattering, more in number; anteroventral and ventral spine-like bristles of f_2 more in number, the former bristles longer; f_3 sometimes with 1 long yellow hair beneath towards base.

Black nodule (Fig. 42) at discal crossvein more elongate, with its long axis more parallel to vein M_1 , with the largest diameter ca. $2\times$ of the smallest diameter, or $0.37-0.42\times$ as long as distance between tips of the crossvein, occupying from a little anterior to the middle of the crossvein to posterior $1/3$, then the posterior straight section of the crossvein almost as long as or a little shorter ($0.8-1.1\times$) than the anterior straight section; the posterodistal corner of discal cell more produced.

Lateral portions of 4th abdominal tergum more strongly expanded ventrally, with rounded lateral margins, and densely clothed with longer, thicker, golden yellow hairs which are as strong as those on 3rd sternum or on lower occiput, mostly arise close to lateral margin; lateral golden hairs on 5th tergum also longer. Posterodorsal corner of epandrium less produced; cercus less weakly tapered towards tip, with lateral ciliation continuous throughout the whole length.

Length: Body $5.1-6.0$ mm; wing $8.3-8.8$ mm.

♀. Much resembling female of *D. nepalensis*, but differing in the following respects. Generally more greyish pollinose; head smaller, distance between ocellar tubercle and apex of labella ca. 1.5 mm ($1.7-2.0$ mm in *nepalensis*); frons with greyish pollinose markings as in male; 3rd antennal segment longer, $1.3-1.4\times$ as long as thick; vertical bristles stronger, usually longer than $2/3$ length of ocellar bristles; dorsocentral bristles longer; brownish pollinose posterior band of abdominal terga much narrower; yellow hairs at sides of abdominal terga longer.

Length: Body $5.7-6.8$ mm; wing $8.5-9.4$ mm.

Holotype ♂, N E of Thudam (4,000 m), $27^{\circ}47'N$, $87^{\circ}36'E$, E. Nepal, 25. vi. 1972 (J. EMOTO).

Paratypes: 10♂ 4♀♀, same locality and data as holotype, (J. EMOTO, H. SHIMA) (KMNHIR 100168) (KMNHIR 100170-171); 7♂ 9♀♀, Thudam (3,500-3,800 m), 19-28. vi. 1972 (J. EMOTO, H. SHIMA including Malaise trap captures (KMNHIR 100165-167) (KMNHIR 100169).

Remarks: This second largest species of the *unipunctatus*-group was collected together with *D. nepalensis* in Thudam area, but the collected specimens are fewer than in the preceding species and mostly teneral in condition. The species was

not collected at lower altitudes such as Salpa La area (3,200 m). These data suggest that *D. auripilosus* has a higher vertical distribution and appears in later season.

***Diostracus longicornis* sp. nov.**

♂. Vertical bristles distinctly weaker (in length and thickness) than postverticals. Third antennal segment (Fig. 36) much elongate, $1.7-2.0\times$ as long as thick, gently tapering towards roundly produced apex, with dorsal arista arising at $2/3$ to $2/5$ of the segment length from base; palpus $2.6-2.9\times$ as long as wide, a little dilated dorsally beyond the middle, and glittering deep purplish blue.

Mesonotum: Five anterior dorsocentrals rather long, usually longer than $250\ \mu$, almost $2\times$ as long as vertical length of prothoracic spiracle; scutellum with a pair of strong scutellar bristles.

Front leg: Subbasal golden yellow hairs on cx_1 rather sparse, not curled apically, the longest as long as cx_1 width; distal clump of black bristles rather small, elongate in area, close to anterodistal margin of cx_1 ; f_1 with 1 strong posteroproximal bristle and often an additional weak posteroproximal bristle; t_1 with 5-6 posteroventral bristles on apical $2/3$, the longest $1.8\times$ as long as t_1 thickness; basitarsus $1.3\times$ as long as 2nd tarsomere. Middle leg: F_2 bearing several short anterior to anteroventral bristles on middle $1/3$, 1-2 strong ventral bristles before the middle, an anteroventral and a posteroventral row of short bristles on apical $2/5$, and bearing a sparse posteroventral ciliation of short, fine, yellow hairs, basal 1-3 of which may become longer (as long as f_2 thickness). F_3 with each 1-3 anterior and anteroventral longish bristles at middle $1/3$ in addition to an anteroventral row of sparsely set short bristles on apical $1/3$, without long yellow hairs beneath.

Black nodule at discal crossvein with its longest diameter $1.5-1.8\times$ of the shortest diameter, or $0.26-0.32\times$ as long as distance between tips of the crossvein, occupying from the middle of crossvein to its posterior $1/3$, then posterior straight section of the crossvein $0.64-0.90\times$ as long as the anterior straight section; posterodistal corner of discal cell moderately produced.

Abdomen: Third abdominal sternum densely clothed with apically curled long golden yellow hairs, of which the longest hairs are longer than 3rd tergum. Lateral area of 4th tergum similar to that of *nepalensis* in expansion and vestiture, clothed with curled golden yellow hairs laterally to sublaterally, the hairs much weaker and shorter than those on lower occiput or on 3rd sternum; 5th tergum without golden hairs at sides, 4th sternum clothed with short, curled, golden yellow hairs. Posterodorsal angle of epandrium bluntly produced as in *auripilosus*, cercus moderately large, $4\times$ as long as wide, not strongly tapered apically, with

evenly set marginal ciliation.

Length: Body 4.3–4.7 mm; wing 6.6–7.1 mm.

♀. Somewhat resembling female of *D. nepalensis*, but much smaller, and differing in the following respects. Third antennal segment (Fig. 37) $1.1\text{--}1.5\times$ as long as thick, with subdorsal arista; wing usually infuscated along discal crossvein; brownish pollinose posterior band of abdominal terga broader, that of 2nd tergum expanding to anterior margin of terga on subdorsal to dorsal portions.

Length: Body 4.6–6.3 mm; wing 6.6–7.8 mm.

Holotype ♂, Thudam (3,500 m), $27^{\circ}45'N$, $37^{\circ}32'E$ – Tanga La (4,700 m) $27^{\circ}40'N$, $87^{\circ}36'E$, E. Nepal, 7. vii. 1972 (Y. NISHIDA).

Paratypes: 21 ♂♂ 18 ♀♀, same locality as holotype, 5–7. vii. 1972 (H. SHIMA, J. EMOTO, Y. NISHIDA, J. TENZIN) (KMNHIR 100173–197) (KMNHIR 194–199); 5 ♂♂ 7 ♀♀, Tanga La (4,300–4,600 m), 6. vii. 1972 (H. SHIMA, H. MAKIHARA) (KMNHIR 100182) (KMNHIR 100210–213); 5 ♂♂ 2 ♀♀, Tanga La (4,700 m)–Topke Gola (3,700 m), 7. vii. 1972 (J. EMOTO, H. SHIMA) (KMNHIR 100180–181) (KMNHIR 100214); 27 ♂♂ 28 ♀♀, Thudam (3,500–3,800 m), 19. vi. –4. vii. 1972 (H. SHIMA, J. EMOTO, Y. NISHIDA, including Malaise trap captures) (KMNHIR 100185–193) (KMNHIR 100200–208); 1 ♂ 1 ♀, Topke Gola (3,700 m), 8. vii. 1972 (J. EMOTO, P. NORBU) (KMNHIR 100215), 1 ♀, Thurukpa (2,600 m)–Topke Gola (3,700 m), 12. vi. 1972 (H. SHIMA); 8 ♂♂ 6 ♀♀, N E of Thudam (4,000 m), 25. vi. 1972 (J. EMOTO, H. SHIMA) (KMNHIR 100183–184) (KMNHIR 100209–210); 1 ♀, same locality, 28. vi. 1972 (J. EMOTO); 2 ♂♂ 2 ♀♀, same locality, 30. vi. 1972 (J. EMOTO); 1 ♂, Papun (2,100 m), 15. vii. 1972 (H. SHIMA); 1 ♂ 3 ♀♀, Topke Gola (3,700 m)–Thurukpa (2,600 m), 9. vii. 1972 (J. EMOTO); 1 ♂ 1 ♀, Salpa La (3,000–3,020 m), 23. vii. 1981 (J. EMOTO).

Remarks: *D. longicornis* is easily distinguished from other species of the *unipunctatus*-group by the much elongate 3rd antennal segment in the male. It is also characterized by the golden yellow hairs on the abdomen, of which the 5th tergum is free from the hairs. The new species seems to be one of the commonest species of *Diostracus* in Thudam area.

Diostracus parvipunctatus sp. nov.

♂. Vertical bristles as strong (in length and thickness) as postverticals or stronger. Third antennal segment (Fig. 35) $1.5\times$ as long as thick, gently tapering towards roundly produced apex, with subapical arista arising at ca. $0.8\times$ the segment length from base. Palpus $2.2\text{--}2.4\times$ as long as wide, widest at apical $1/3$, glittering deep purplish blue.

Thoracic nota sombre bronze in colour, with weak green reflections on

dorsomedian and dorsocentral stripes; 5 anterior dorsocentrals moderately long, usually longer than $250\ \mu$, almost $2\times$ as long as vertical length of prothoracic spiracle; scutellum with a pair of strong scutellar bristles.

Legs densely ash grey pollinose. Front leg: Cx_1 with sparse long golden yellow hairs on basal $1/3$ of anterior surface, the longest as long as Cx_1 width, and with distal black setae not forming a clump but arranged in a submarginal row; f_1 with 1–2 posteroproximal bristles besides 0–1 weaker ones, arranged in a longitudinal row; t_1 with 4–7 posteroventral bristles, the longest $2\times$ as long as t_1 thickness; basitarsus $1.5\times$ as long as 2nd tarsomere, its posteroventral ciliation of long setae $2.5\times$ as long as its thickness. Middle leg: F_2 bearing many ventral to anteroventral bristles on apical $2/3$, the longest towards base $2/3$ as long as f_2 thickness, f_2 also with an irregular posteroventral row of long yellow hairs on basal $1/2$, of which the longest at basal $1/4$ is $2.5\times$ as long as f_2 thickness. Hind leg: F_3 with an anteroventral row of sparsely set black bristles for subbasal portion to tip decreasing their lengths towards tip, the longest of which is as long as f_3 thickness, f_3 also with a posteroventral ciliation of yellow hairs ($2\times$ as long as f_3 thickness) similar to that on f_2 .

Black nodule (Fig. 43) at discal crossvein small, with its longest diameter $1.4\times$ of the shortest diameter, or $0.22\times$ as long as distance between tips of the discal crossvein; the nodule occupying the middle of the crossvein, thus the posterior straight section of the crossvein subequal to the anterior one.

Abdomen: Third abdominal sternum densely clothed with apically curled long golden yellow hairs, of which the longest are more than length of 3rd tergum. Lateral portion of 4th abdominal tergum clothed with many long, curled, golden yellow hairs, which are rather stronger than those on 3rd sternum or on lower occiput, 4th sternum and sides of 5th tergum also clothed with golden yellow hairs. Posterodorsal corner of epandrium only bluntly angled; cercus rather much elongate, $6.6\times$ as long as wide, evenly but not strongly tapering apically, with marginal ciliation of golden yellow curled hairs.

Length: Body 4.4–4.7 mm; wing 6.2–6.3 mm.

♀. Similar to female of *D. longicornis*, but differing in the following respects; vertical bristles moderately strong, ca. $2/3$ as long as ocellar bristles; f_2 and f_3 beneath sparsely with long yellow hairs, of which the longest are $1.5\times$ as long as thickness of femora.

Length: Body 5.2–5.9 mm; wing 6.8–7.1 mm.

Holotype ♂, Thudam (3,500 m), $27^{\circ}45'N$, $87^{\circ}32'E$ – Tanga La (4,700 m), $27^{\circ}40'N$, $87^{\circ}36'E$, E. Nepal, 5. vii. 1972 (J. TENZIN).

Paratypes: 1♂, same data as holotype (KMNHIR 100172); 2♀♀, Tanga La (4,300–4,600 m), 6. vi. 1972 (H. SHIMA).

Remarks: *D. parvipunctatus* is unique in the long golden yellow hairs on the posteroventral surface of the hind femur among species of the *unipunctatus*-group.

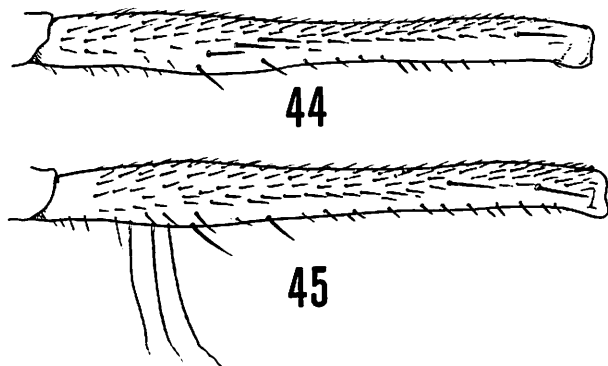
It is also less differentiated in the black distal setae on front coxae, and the small-sized black nodule on discal crossvein. The male specimens were possibly collected at the higher point in the altitude range indicated in the label, as no specimen of this species is represented among numerous material from Thudam, the lowest of the range.

Diostracus rotundicornis sp. nov.

♂. Third antennal segment (Fig. 38) $1.0-1.2\times$ as long as thick, almost circular, thickest at basal $1/3$, then evenly rounded apically, with subapical arista. Palpus $2.3-2.7\times$ as long as wide, widest at apical $1/3$, glittering brownish green or dark golden green. Lower occipital area clothed densely with long, apically curled, golden yellow hairs.

Thoracic chaetotaxy: Five anterior dorsocentrals short, 2nd to 4th dorsocentrals mostly $125-130\ \mu$ long; scutellum with a pair of strong scutellar bristles.

Front leg: Cx_1 densely clothed with long, apically curled, golden yellow to yellowish white hairs, which are $2\times$ as long as Cx_1 width, subapical clump of black setae of Cx_1 occupying an oval area close to outer anterodistal margin of Cx_1 , proximal border of the clump at the level of distal $1/3$ of inner margin of Cx_1 in frontal aspect; f_1 with 2-4 posteroproximal black bristles arranged in a longitudinal row; t_1 with 3-7 (mostly 6) posteroventral bristles, the longest $1.5-1.7\times$ as long as t_1 thickness; basitarsus $1.1-1.2\times$ as long as 2nd tarsomere. Middle leg: F_2 (Fig. 45) with 2-4 short anteroventral and 1-2 long ventral bristles, and several (mostly 4-5) long yellow posteroventral hairs (the longest $2.0-2.5\times$ as long as f_2 thickness) around $1/3$ of f_2 length from its base. Hind leg: F_3 almost always with 1-3 short anteroventral or ventral bristles on proximal $1/3$, the bristles are only slightly differentiated from usual setae.



Figs. 44-45. Male left middle femora, anterior aspect.

44. *Diostracus unipunctatus* sp. nov., 45. *Diostracus rotundicornis* sp. nov.

Black nodule at discal crossvein large, with its longest diameter 1.4–1.8 (mostly 1.6) \times of the shortest diameter, or 0.4–0.5 \times as long as distance between tips of discal crossvein, with its long axis at almost 45° to anterior margin of discal cell, the nodule occupying from a little anterior to the middle of discal crossvein to its posterior 1/5, so that the posterior straight section of the discal crossvein 0.5–0.54 \times as long as anterior straight section; posterodistal corner of discal cell moderately produced.

Abdomen: Lateral portions of 4th and 5th terga below the sublateral black spots, and 3rd and 4th sterna seemingly bare except sparse, short, yellow hairs, of which those on 4th tergum are at most as long as the longest diameter of the sublateral black spots. Yellow hairs on 3rd sternum shorter than 1/2 length of 3rd tergum. Posterodorsal portion of epandrium slightly roundly produced; cercus rather long, evenly slender, ca. 8 \times as long as wide, not strongly tapered apically, clothed with long marginal ciliation.

Length: Body 4.4–5.1 mm; wing 6.3–6.6 mm.

♀. Somewhat resembling female of *D. longicornis* in several respects, including dull brownish green (occasionally dull green) discal area of mesonotum, and cx_1 mixing black setae on anterodistal surface, but differing as follows. Third antennal segment evenly rounded distally, 0.9–1.1 \times as long as thick; dorso-centrals distinctly shorter, ca. 150 μ long; wing not infuscated along discal crossvein.

Length: Body 4.2–5.6 mm; wing 6.2–6.9 mm.

Holotype ♂, Chiaksila Kharka (2,780 m), 27°26'N, 86°57'E, E. Nepal, 15. vii. 1981 (J. Emoto).

Paratypes: 1♂5♀♀, same data as holotype; 11♂♂11♀♀, Salpa La (2,800–3,000 m), 13–29. vii. 1981 (J. Emoto, including Malaise and light traps captures) (KMNHIR 100216–221).

Remarks: *D. rotundicornis* is easily distinguished from preceding species by the pregenital segments without dense, long, golden yellow hairs in the male, and the short, rounded 3rd antennal segment. This new species seems to most resemble *D. saigusai* from Taiwan, but may be distinguished from the latter in the male by the presence of strong anteroventral and ventral bristles on the middle femur and anteriorly-shifted wing nodule. It inhabits Salpa La area, and is not almost certainly distributed in Thudam area higher than 3,000 m alt.

Diostracus unipunctatus sp. nov.

♂. Third antennal segment (Fig. 39) short, 0.9–1.0 \times as long as thick, thickest subbasally, then evenly rounded, with subapical arista. Palpus 2.6–2.7 \times as long as wide, widest at apical 1/3, glittering greenish blue, often with golden brown sheen. Golden yellow lower occipital hairs less strongly curled

apically than in *rotundicornis*, but similarly dense and long.

Thoracic chaetotaxy: Five anterior dorsocentrals short, 2nd and 3rd dorsocentrals usually ca. $175\ \mu$ long; scutellum with a pair of strong scutellar bristles.

Front leg: Cx_1 with basal golden yellow hairs as in *rotundicornis*, but the hairs less strongly curled apically, subapical clump of black setae occupying oval area of which the distal border remote from distal margin of Cx_1 , the proximal border of the clump at the level of the middle of inner margin of Cx_1 in frontal aspect, consequently centre of the clump distinctly more proximal than in *rotundicornis*; f_1 with 4–7 posteroproximal black bristles in a mass; t_1 with 3–4 (mostly 4) long posteroventral bristles, the longest $2.3\text{--}2.4\times$ as long as t_1 thickness, the most distal one at $1/4\text{--}1/3\ t_1$ length from tip of t_1 ; basitarsus $1.3\text{--}1.4\times$ as long as 2nd tarsomere; posteroventral row of short spines of basitarsus disappearing beyond its subapical portion, and 2nd tarsomere lacking the similar spines which are usually present at its extreme base in other Nepalese species of the *unipunctatus*-group. Middle leg: F_2 (Fig. 44) with each 1–3 anterior and anteroventral short strong black bristles around basal $1/3$, and rarely with a similar but shorter ventral bristle, but lacking beneath long yellow hairs, which are reduced into a few much short fine posteroventral hairs less than $0.5\times\ f_2$ thickness in length. Hind leg: F_3 without short anteroventral or ventral bristles on basal $1/3$.

Black nodule at discal crossvein large, with its longest diameter $1.4\text{--}1.6\times$ of the shortest diameter, or $0.32\text{--}0.43\times$ as long as distance between tips of the discal crossvein, with its long axis about at 45° to M_1 , the nodule occupying from just before the middle of the discal crossvein to the posterior $1/7$, so that the posterior straight section of discal crossvein $0.28\text{--}0.40$ (mostly ca. 0.33) \times as long as the anterior straight section; posterodistal corner of discal cell not produced.

Abdomen: Vestiture, shape of epandrium and cercus almost as in *D. rotundicornis*, but posterior part of 4th abdominal sternum less strongly projected ventrally.

Length: Body 4.1–5.1 mm; wing 5.8–7.1 mm.

♀. Structurally extremely similar to female of *D. rotundicornis*, but easily distinguished from it in the following respects. Discal portion of mesonotum usually subshining green, occasionally subshining dark green with a cupreous reflections; anterior surface of Cx_1 clothed only with fine yellow hairs; wing often infuscated along discal crossvein.

Length: Body 4.3–5.4 mm; wing 6.1–7.5 mm.

Holotype ♂, Thudam (3,500–3,800 m), $27^\circ45'N$, $87^\circ31'E$ – $27^\circ46'N$, $87^\circ33'E$, E. Nepal, 27. vi. 1972 (H. SHIMA).

Paratypes: 1♀, Same locality as holotype, 26. vi. 1972 (J. EMOTO); 3♂♂ 5♀♀, same locality and data as holotype (H. Shima, Y. Nishida) (KMNHIR 100222–224); 12♂♂ 3♀♀, Thudam (3,500 m), 21. vi. – 8. vii. 1972 (H. SHIMA,

Malaise trap captures) (KMNHIR 100225–227); 1♂ 1♀, Topke Gola (3,700 m) – Thurukpa (2,600 m), 9. vii. 1972 (J. EMOTO); 1♂, NE of Thudam (4,000 m), 25. vi. 1972 (H. SHIMA); 1♀, same locality, 28. vi. 1972 (H. SHIMA); 1♂, Thurukpa–Topke Gola (3,700 m), 12. vi. 1972 (H. Shima); 1♂, Papun (2,100 m), 15. vii. 1972 (H. Shima); 4♂♂ 1♀, Salpa La (3,000–3,200 m), 23–29. vii. 1981 (J. Emoto).

Remarks: *D. unipunctatus* much resembles *D. rotundicornis* in every respect, but quite distinct from the latter in several characters, particularly in the chaetotaxy of middle and hind femora in the male, and the subshining discal area of mesonotum in the female. *D. unipunctatus* is sympatric with *rotundicornis* at lower altitudes in its vertical distributional range.

Altitude, latitude and longitude of localities

	altitude	latitude	longitude
Basantapur	2,300 m	27°07'N	87°24'E
Buze	2,800 m	27°18'N	87°32'E
Chiaksila Kharka	2,750 m	27°26'N	86°57'E
Chitrey	2,420 m	27°07'N	87°24'E
Chouki	2,700 m	27°12'N	87°24'E
Jumbesi Khola	3,450 m	27°38'N	86°33'E
Lamjura La	3,530 m	27°35'N	86°30'E
Moyam	1,850 m	27°35'N	87°14'E
Navagaon	2,100 m	27°37'N	87°16'E
N E of Thudam	4,000 m	27°47'N	87°36'E
Papun	2,100 m	27°32'N	87°38'E
Penmaten	2,600 m	27°36'N	87°36'E
Ponktable	1,900 m	27°18'N	87°35'E
Salpa La	2,900 m	27°27'N	86°55'E
Sukhe Kola	2,050 m	27°31'N	87°16'E
Tanga La	4,700 m	27°40'N	87°36'E
Tank	1,900 m	27°33'N	87°36'E
Thudam	3,500 m	27°45'N	87°32'E
Thurukpa	2,600 m	27°36'N	87°36'E
Topke Gola	3,700 m	27°38'N	87°35'E
Tragdobuk	3,180 m	27°35'N	86°31'E

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